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GAS JOURNAL

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[Founded in 1849 as the "Journal of Gas Lighting."]

Vol. CL. No. 2975.] LONDON, MAY 18, 1920. [72nd Year. Price 8d.

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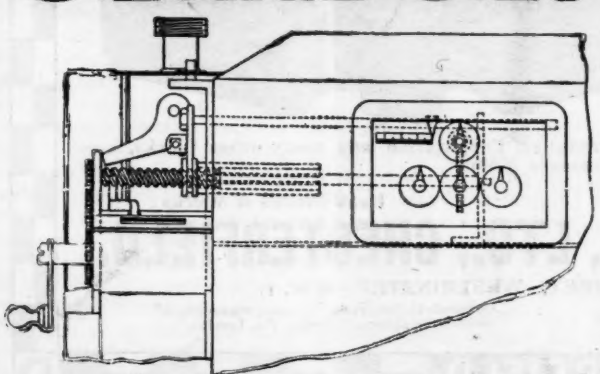

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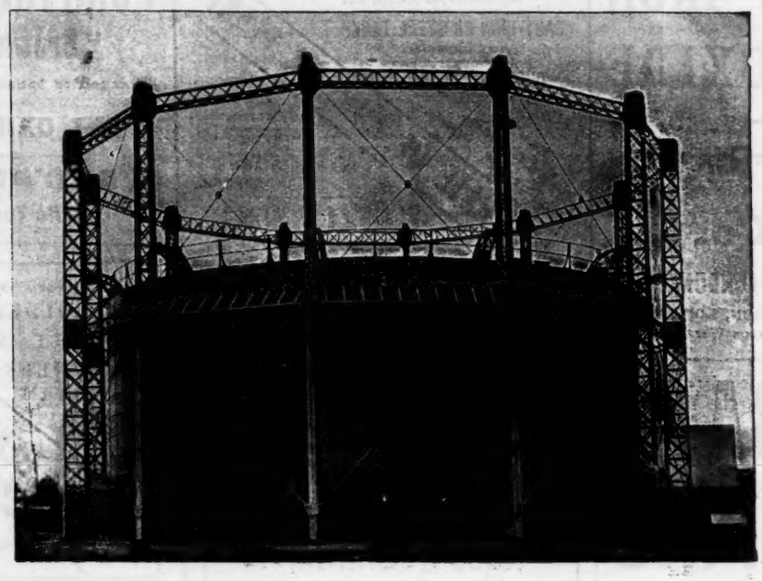

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EDITOR & PUBLISHER: WALTER KING. OFFICE: 11, BOLT COURT, FLEET ST., LONDON, E.C. 4.

VOL. CL., No. 2975] TUESDAY, MAY 18, 1920. [72ND YEAR.

EDITORIAL NOTES.

Reflections on the Results of the First Hearing.

THE first stage of the parliamentary proceedings on the South Metropolitan and South Suburban Bills has ended, and that successfully, save that the proposed standard dividend on the old capital has been reduced to 5 p.ct. in place of 6 p.ct., about which point we shall have more to say presently. Otherwise, there is comparatively little change in the Bills, which is evidence that the Lords Committee fully appreciated that they had before them samples of cases—and the circumstances of the two quite different—which showed that the time had arrived when a great industry found it necessary to seek, and were fully justified in seeking, the help and sanction of Parliament to a revision of its statutory conditions. It is impossible, of course, to foretell what will be the result of the appeal to the House of Commons; but if the Board of Trade does not influence a suspension of the two really vital sections of the Bills, the strength of the cases presented in the House of Lords should carry the measures safely through the Commons. The proceedings on the South Metropolitan Bill were dealt with by us last week. As to those on the South Suburban Bill, there was no necessity for such an extensive presentation of evidence as by the neighbouring Company, seeing that the principles and conditions affecting finance were much the same. But the case of the Company from farther south was sound in every respect; and the Company did not go for support outside their own Chairman (Mr. Charles Hunt), the Chief Engineer (Mr. John Terrace), and one of the Auditors (Mr. E. W. Drew, F.C.A.). The Company in one particular respect were, however, faced with a somewhat imposing difficulty, of which the utmost was made by the opponents. But fortunately the latter were unsuccessful. It was the high calorific power which the South Metropolitan Company propose to declare in the first instance, and which quality has been the means of fostering the continued existence of flat-flame burners to (according to evidence) an extent which does not obtain in the areas of most other gas suppliers, where luminosity of gas *per se* is not a matter to which to-day any regard is paid. To use the flat-flame burner conditions in the South Metropolitan area as an argument against the economical provision of heating gas (which is what is also needed for the economical gas-saving incandescent burner) is an attempt to use what should be obsolete as an obstruction to progress.

The position of the South Suburban Company has been rendered very complicated through events. Its works are fully pressed when the winter's maximum demand is on; the new scheme of works on the banks of the Thames has been hung-up through the war; and, while the economies that were estimated to accrue from them have had their basis changed, to carry out the new works will mean to provide the same plant capital costs far removed from the original ones. Then during the war their prudent coal arrangements have been very seriously interfered with; and they stood we should say unique in this or any other country in having a calorific standard for a large part of their area, and an illuminating one for the remainder. They were labouring in a tangle of conditions, legislatively and war produced. But the Bill, if it succeeds as it now stands, will put the concern on, as near as current circumstances will allow, conditions of a more consistent and workable order. A calorific standard will, assuming the success of the Bill, apply to the entire area; and what is more, by agreement, it has been arranged for the whole supply to come under the jurisdiction of the Metropolitan Gas Referees, instead of being subject to a number of different local authorities. With the new capital-raising powers, the Company will also be better situated in pressing forward with works to enable them to secure operating economy from the site on the river-side. But the new capital allowed will only satisfy for a comparatively few years, at the rate at which it will have to be spent at Belvedere.

Taking the two Bills together, let us see what has happened. At head and front of the objections of the opposition was financial revision—not on the ground that financial revision is not warranted, but solely as to the degree and the method of revision. There was success in reducing by 1 p.ct. the proposed minimum dividend of 6 p.ct. of the South Metropolitan Company, and the standard dividend of 6 p.ct. of the South Suburban Company. Both were put at 5 p.ct. on the old capital; and the South Suburban Company's proposed standard price was put down a penny to 1s. 2d. per heat unit (100,000 B.Th.U.), while the South Metropolitan Company's proposed 11d. per heat unit was confirmed. There is, of course, a dissimilarity between the two areas and conditions of the Companies which alone justifies the difference of 3d. in the standard prices, both of which, however, are the equivalent of 5s. 2d. per 1000 c.ft. of (at present) different calorific value gas. It will be seen that the House of Lords Committee have allowed both forms of scale—the South Metropolitan minimum dividend with rise and fall below the standard price of 11d. per heat unit, and the South Suburban with the dividend rising with reductions below the standard price and descending with increases above it. This alone is a sufficient justification of the difference in the standard prices without any other considerations. If the Bills go through, it may be that it will be accepted as a parliamentary principle or precedent that (according to the circumstances of a company) a somewhat lower standard price per heat unit should be permitted with a minimum dividend than will be allowed if the slide is on both sides of the standard price. This, however, is a matter yet to be determined.

The 5 p.ct. as indicated refers to the old capital; but a great point was properly made, in pressing for 6 p.ct., of the fact that, unless the old capital was restored to a reasonable dividend receiving basis, it would be detrimental to the raising of any new capital, and this at a time when money is urgently required for production developments and renewals of plant. This is perfectly obvious. But the Lords Committee preferred to put the inducement on the new capital rather than on the old; and in these two cases they did it by discriminating between the positions of the Companies—by allowing a 6 p.ct. minimum dividend on the new capital of the South Metropolitan Company, and a 7 p.ct. standard on that of the South Suburban Company. There, again, some consideration appears to have been paid to the minimum dividend of the one case, and the risk of the slide above the standard price in the other. As investors, however, we have a feeling in favour of the minimum dividend, while recognizing the measure of protection given by the 3d. higher standard price per heat-unit in the case of the South Suburban Company. While agreeing that the distinction in the standard dividends as between old and new capitals is necessary with the standard dividend on the old stock at only 5 p.ct., we do not think the Lords Committee have done justice to the old stockholders, for several reasons. In the first place, in pre-war times the South Metropolitan Company ordinary stockholders were entitled to approximately 5½ p.ct.; and the South Suburban Company were being paid 6 p.ct., with money values and costs what they then were. Money values and costs have

changed for the worse; and the stockholders, whose money has established and developed the concerns, who have lost considerably during the war, and who, with only a standard dividend of 5 p.ct., stand little chance of ever recouping the loss and the premiums paid for their stock, or recovering the former market value of the stock, will see new capital come in entitled to standard dividends of 6 and 7 p.ct. The propriety of the 6 and 7 p.ct. dividends we do not dispute. They are necessary; but we do rebel against the standard of 5 p.ct. on the old stock. It is unfair. The Companies, however, are (the decision provides) to put in an appearance again in five years' time for the purpose of having an investigation made to ascertain whether or not readjustments in the terms are necessary; and if the inferior position of the old stockholders to the new can be proved to be a positive disadvantage, then there is no obstacle (as things stand at present) to the matter of their position being again raised. Had the advance in the price of coal, which will affect also the cost of materials (which, through labour and other causes, have risen further since the Bills were introduced), come a week earlier, it might have influenced a little more generosity to the old stockholders on the part of the Lords Committee. We do not for a moment suppose that when the Bills are passed, with known and threatened advances in outgoings, the Companies will be in a position to pay the 5 p.ct. in the first subsequent complete half year; and it is no good encouraging the hope that they will be able to do so, until more definite information is available. But anyway there should be a welcome improvement in the position of the ordinary stockholders.

As to the calorific power, the initial declared standard in the case of the South Metropolitan Company—at any rate, it is the promise—is 560 B.Th.U., and in that of the South Suburban Company 475 B.Th.U.—the Committee having raised the proposal of the latter promoters by 25 B.Th.U. Of course, both Companies will have the right when the Beilby recommendations are confirmed by Parliament to declare a fresh standard, by complying with the conditions as to the compulsory adjustment of consumers' appliances, unless the consumers refuse to allow this to be done. Mr. Freeman, on behalf of the London County Council, tried to get the Committee to adopt the principle of uniformity in the declared calorific standard in the case of all companies coming under Metropolitan testing. But it would not be fair to the other London companies to have their declared power set (for example) by that of the South Metropolitan Company. It would be giving the Company and their policy a dominating power over the others. This would be wrong, and would be contrary to the spirit and letter of the recommendations of the Board of Fuel Research, and opposed to coal economy and individual development.

However, the hearing of the cases upon these two Bills has, in the result, shown us that at any rate the House of Lords are favourable to the gas industry being restored to a sounder position than financially it has been in of late years, and to it having the means conferred upon it of expanding its national usefulness.

Richer Gas During Official Testings.

In the last two issues of the "Journal," comment has been made upon the statements in the report of the Board of Fuel Research regarding the artifice adopted in one case of supplying gas of better quality for an hour or two before and after the time of notified official testing than was the rule at other hours of the day. Our protest was directed to the inference that, in the opinion of many men, could well be drawn from the statements—that this mean practice was believed to be prevalent in the gas industry. Our attention has since been drawn to paragraph No. 176 of the report, which, it is suggested, shows that any such inference would be wrong. The paragraph in question reads:

> We consider that, *while the above experiences may be regarded as exceptional*, they should be referred to here, as they show how completely the present system of control can break-down, leaving the consumers without any real security that they are receiving the commodity for which they are paying. Fortunately, they also show the direction in which security can be assured, through payment by thermal units received, based on the continuous records of a trustworthy calorimeter.

On carefully reading this paragraph, it is quite obvious the point on which attention is specially directed is not the misbehaviour of a particular undertaking, but the fallibility of the present system of control. The lessons to be learned from these experiences were evidently regarded by the writer of the report as of sufficient importance to over-ride the reluctance which would naturally be felt by him in having even to refer to the particular incidents.

The Higher Coal Price and the Gas Industry.

When coal, which plays such an important part in ruling the price of most other commodities, is going to settle-down to a fairly stable cost per ton, or recede to a lower level, one would not care to prognosticate. If the coal industry is worked as a whole, and the profits on part of it are available for the loss on another part, or if production shows signs of improvement, then the miners ask and get an increase of wages that wipes-out all the advantage, and puts the price of inland coal up to a higher level than ever, with destructive consequences the country through. When the Government made their recent present to the consumers of domestic coal, and to users of gas and electricity for household purposes—a present equal to 10s. per ton of coal—from the profits upon exported coal, the uncertain character of the foundation upon which this concession was made was pointed out by us. Inasmuch as inland coal was being sold below cost price, and only export coal at a considerable profit, and this profit only maintainable so long as we could spare the amount of coal necessary for export, and other countries did not enter into competition, we were in respect of the rebate on household coal working on purely artificial conditions, which were made distinctly worse by the differentiation between domestic and industrial coal. The insecurity of the basis of the allowance is shown by the rapid change from the position which permitted it to one that not only demands its cancellation, but an addition to the price of a further 4s. 2d. per ton. Exports are now diminishing, coal is coming to the Continent from America and New Zealand, and the last advance in miners' wages has increased the cost of production by a further 2s. 10d. per ton. It is thus time that the Government put the inland coal-supply business on an economic basis, and so let the country know exactly where it is in this matter. This they have now done by raising as from Wednesday last the price of domestic coal by 14s. 2d.—that is to say, by taking-off the 10s. rebate and adding 4s. 2d.—and advancing the price of industrial coal by 4s. 2d. The difference between the 2s. 10d. per ton increase in wages and the 4s. 2d. is the amount by which the average price of inland coal is short of the sum of wages, other expenses, and coal owners' profits. There is talk of this fresh advance, and the placing of the coal industry on an economic basis, being the first step to the decontrol of coal for inland consumption; and the Government wish it to be understood that the new price is a maximum, and not necessarily the charge that will be made. We should be very glad to see free competition in the coal trade, but are afraid, from past experience, that maximum prices will be utilized as standard ones, and that the laws that should govern competitive prices will be disregarded and disrespected.

The gas industry will not grieve over the withdrawal of the 10s. rebate on domestic coal. All that it has done so far as gas is concerned is to bring upon the industry a great deal of work, worry, and disagreement with consumers who considered—not knowing better—that they were entitled to 10d. per 1000 c.ft. rebate. While the 10s. rebate was being allowed, there were householders who tried to get more coal, and to use less gas because the 10s. rebate on coal was a definite, uniform figure, which was not the case with the calculated allowance on gas. The point ought to be made quite clear to consumers why the 10s. per ton is now to be taken off and a further addition made. On every retailer's coal waggon in every working-class district throughout the United Kingdom, the announcement ought to be boldly printed in conjunction with the current prices that miners are now being paid (including the new advance) 22s. 9d. per ton of coal raised, as compared with 6s. 4d. in 1913—an increase of 260 p.ct., to say nothing of the reduced working hours. These changes in the price of coal always fall awkwardly for the gas industry. From last Wednesday, there are exactly seven weeks before this quarter ends; and until then there will be no possible chance of raising the price of gas, though the alteration in the cost of coal will, we take it, as in previous cases, operate on gas coal from the day of increase as in the case of other industrial coal. Then, further, what is the industry to do about the allowance in this broken

quarter? The reduction of 10s. upon coal for domestic gas making, of course, stopped on all despatches from the collieries on and from last Wednesday; there has been no time allowed for the reading of gas-meters; and it would be an impracticable thing to attempt to do anything of the kind at this period of the quarter. All that will be possible will be to "square up" accounts with the consumers at the end of the quarter by distributing the rebate actually received so far as it will go over the quarter's gas consumption.

The higher price of coal—the 4s. 2d. means approximately £4,000,000 on the gas industry's consumption—intensifies the argument for extracting from it the largest possible result in B.Th.U. in the form of gas, with, of course, due regard to the contribution that the different secondary products will make to the sale of the B.Th.U. at the lowest possible price. The highest economy and efficiency should always rule in every works; but the higher the costs of materials and labour, the greater the need of, and the more imperative become, economy and efficiency.

There was a long discussion in the House on Wednesday, on the subject of the increase, which was initiated by Mr. Brace (one of the miners' representatives) on behalf of the labour party. The discussion did not in any way alter the position, nor produce any fresh facts. The Government remained firm in their intention to place the industry on an economic basis. There were one or two notable points. Mr. Brace stated that, at the beginning of the war, the miners offered to enter into a covenant that if the coal owners would not raise the price of coal beyond what it then was, they would undertake not to seek any advance in wages. How could the owners blindly enter into such a covenant? With the diminution of men, the reduced production, the higher cost of necessaries for working the mines, the price was bound to go up somewhat. There was no discrimination on the part of the miners in making their offer between essential and non-essential increase of price; and in the non-essential category, there now stands a good proportion of the extra wages paid to the miners. When the relation of the wages paid to the total costs of winning coal is examined, and the percentage of the addition is ascertained in comparison with the increased cost of living, it is not very difficult to see that the miners' anxiety for the interests of the community find no ratification from the sum they put into their own pockets for work they actually do. Another feature of the demands of the labour party is that the Government should concentrate on the increased cost of living; and yet in the same breath their spokesman asked that there should be a differentiation in coal price in favour of householders compared with industries. We cannot see the logic of this. If the cost of production is to be maintained to the extent that high coal prices affect the cost, then it follows that to an equal extent the cost of living will be maintained. At the same time, there must be sympathy with the view that there is no reason why at the expense of the coal trade other industries should make high profits. Where, however, would the labour party put the gas industry in this connection? It cannot by any stretch of the imagination be alleged that the industry makes high profits at the expense of the coal industry or of the community. Its profits are regulated by Parliament; and during the war years, the investors in the industry have had some difficulty in realizing that they have been receiving dividends from their investments. Moreover, the gas industry is, with the coal industry, suppliers of fuel to the whole community; and the families of workers in the United Kingdom who use gas as fuel for cooking, hot water supply, and heating total millions. The labour party, when making the claim for discrimination between householders and industries, should themselves discriminate between the industries; then gas would stand well.

Points from the Report of the Institution Council.

THERE will be a mass of technical topics submitted at the annual meeting of the Institution; and about it there is ground for believing there will be much that is not only interesting, but that will help to broaden views. Independent of the Presidential Address of Sir Dugald Clerk, the items on the *agenda* foreshadow this; the annual report of the Council lifts the veil a little more, and puts the promise into definite character. The report shows that in several respects the enforced passiveness in, or slow movement of, technical investigation during the years of war is now a matter of history. The period that intervened between the armistice and the meeting of last year had been one during which investigation had in some directions been proceeding, but not on the maximum attainable scale of normal times, and in other lines preparation had had to precede a revival of activity. This has now all passed, and work is going along with good momentum and effect. Part of the report is, of course, taken up by matters that have been made common property through our columns—such as the agreement over the Board of Fuel Research report, and the standard method of sampling and testing spent oxide. But the incorporation of these in the report is necessary for preserving the completeness of the Council's record of activities.

There are in the report one or two matters, pendent to the Board of Fuel Research recommendations to the Board of Trade, that attract attention. An important thing for the gas industry, in view of the plan for changing its operations to a heat-unit basis, is the continuously recording calorimeter that will be adopted as the standard instrument. Whatever recording calorimeter is selected will have a heavy responsibility placed upon it. It must be an instrument above all suspicion. It has at once to stand as the guardian of the consumers' interests, and the protector of the reputation of gas undertakings for honest dealing. Therefore, the instrument of greatest precision and reliability is the one that is required. Sir George Beilby and his colleagues have been for some time now inquiring into the veracity of the calorimeter, and are desirous of having brought before them all new inventions in this direction. The Institution have a Special Committee operating in the same direction; and the Gas Investigation Committee are collaborating with them. Mr. John F. Simmance has been very helpful in this matter, and has demonstrated to the Institution Committee the working of various types of instruments. New times are in store for gas men. They will want not only a recording calorimeter possessing the highest degree of accuracy, but those gas managers who have not yet had practical experience of calorimetry will probably before they are much older realize the need, supplemented by a knowledge of simple chemical analyses.

In another part of the Council's report, there is one by Mr. D. H. Helps, as the representative of the Institution on the Fuel Economy Committee of the British Association. Frankly, we do not envy Mr. Helps his position, so far as recent proceedings are concerned; for these proceedings, instead of advocating fuel economy, furnished some suggestions which led in the contrary direction. We have never yet been able to see what the Board of Fuel Research report on Gas Standards had to do with the Fuel Economy Committee of the British Association. But, for some inscrutable reason, a large majority of the Committee considered that it was a subject that came within their purview. Hence the impracticable recommendations that resulted, so far as the gas industry's progress in national service and fuel economy are concerned, from which recommendations Mr. Helps dissented; but his voice was as that of one crying in the wilderness. The dissent was no doubt regarded as that of an interested party, and whoever the person or persons who desired to plunge the gas industry suddenly into a mass of fresh complication were supported by other members of the Committee who knew as little about the practicability and want of necessity for the proposals as they did about the chemical and physical considerations that gave them birth. There is in the report no criticism of the proposals; only the mention of protest having been registered. Mr. Helps, being on the Committee, cannot, we imagine, very well put into print all he feels about this matter. But there is no reason why on the Council's report members of the Institution should not express their disapproval of the British Association Committee's proceedings, and of the subsequent visit of members of the Committee to the President of the Board of Trade with the amiable intention of putting a few more obstructions into the wheels of the industry. Mr. Helps says he has "always to bear in mind that the members "of the Committee were appointed not in the interests of a "particular industry or body, but in order to assist the pro-"motion of fuel economy." We have examined with scrupulous care the recommendations in question to ascertain where they were in any way likely to serve "fuel economy," but there has been failure in making favourable discovery. And we are not aware that the Committee were appointed by the British Association for the purpose of attempting, by proposing unnecessary restriction and regulation, to hinder the development of any industry. The programme of investigation that the Committee have now before them is of

a different and appropriate order. But it seems to us that even in these matters the Committee are carrying exploration into exactly the same fields as the Board of Fuel Research propose to cover.

Chapters of considerable importance will, it is clear from the Council's report, be added to the published records of the Gas Investigation Committee. The results of the work have already been of very material value in connection with the amendments made to the Board of Fuel Research recommendations. Had it not been for the testimony of the results of this investigation, we might still have had the recommendation as to 12 p.ct. of inerts standing as part of the recommendations, instead of a three-stage period drop from 20 p.ct. to 15 p.ct. From what is said in the Council's report, there is anticipation of a good informative and discussable report from the Gas Investigation Committee. Also prompting expectation are the references to the Refractory Material Committee's report. The Council tell of gratifying success having attended the efforts of the Committee in searching out ways and means, and investigating the best composition of materials for casting retorts of satisfactory texture and clean surface. The products from the experimental work have met with much commendation from the experts in the refractory material world and from gas engineers. The manufacturers are now at work making retorts by the process for trial on a practical scale. This will give the proof, and determine the question of patronage. We should not be surprised to learn that this form of retort may be somewhat more expensive than the ordinary; but if in service and life it gives value for money, any additional first expense (if any) will be well repaid. There are other matters surrounding the Committee's work which members will notice in the report, and especially the proposed relations of the Committee to the new Refractories Research Association, the President-elect of which is Sir William Jones. From the Gas-Meter Research Committee, we are hoping to have knowledge extended as to the corrosion of mains and services. Thus it will be seen that the report of the Council, besides being informative on general matters, is indicative of the character of work done during the year in technical investigation. Here, however, we have only touched upon some of the more outstanding matters.

Trade Union Combinations.

The country has been threatened with "direct action" on the part of labour extremists, in order to force the elected representatives of the people to comply with their mandates; but the extremists have reluctantly come to the conclusion that the country is in no mood for such a movement on their part. We have a Triple Alliance—composed of three of the most powerful Trade Unions in the country; and we have Federations of Unions. The object of these alliances and federations is mutual support. As combinations, if properly directed, they could be very useful to the country; but the country is being driven by events to the opinion that their object is more coercive than helpful. The combinations are strategic moves with a view to using the power of numbers to force submission to demands, no matter how excessive. The combinations of trade unions in the country will view with a certain amount of displeasure, and watch keenly for the result of, a bold stroke that the French Government has made against the General Confederation of Labour. This great central labour organization has been making grave attempts lately to disorganize the life of France. The Government are tired of its methods, and so have ordered proceedings to be taken with a view to bring about its dissolution. This firm step is approved by a large section of the community; for the people are getting incensed by the tyranny exercised by the organization in seeking the attainment of political objects. One interpretation of the Government action is that the Confederation (by trying to impose nationalization of the public services by means of a strike) was going over the heads of the people's representatives in Parliament, and was therefore infringing the power of the popular vote.

By a French law of 1884, the exclusive object of trade unions, or combinations of trade unions, is prescribed to be "the study and defence of their economic interests." It is declared by M. Millerand that the Confederation is a power which pretends to set itself up against the public powers, and to obtain the triumph of its claims by stopping the life of the country, and disturbing the customs, needs, and interests of the Republic. This is not an object of the 1884 law. The Confederation could be an organization which could render the greatest possible service to the community. But its greatest activities appear to be to bring about combined stoppages of interests whose activities are absolutely necessary to the economic life of the country; and this at a moment when France has vital need of work and production. Within the past few days, the Confederation have called out the gas and electrical workers in Paris; but the latest report to hand shows that our friends had the position well in hand, and the gas supply was being maintained, though the pressure was somewhat reduced. We wish them every success in their battle with the forces opposed to the well-being of the country. The combinations of labour unions in this country have not as yet reached the length of calling for stoppages of work simultaneously in several industries; but in the combinations there is the menace. The right to combine for legitimate purpose is not denied; but to use the power of numbers spread over vast interests to bring about compulsory acquiescence in claims and demands, whatever their nature, and however noxious to the public interests, is something the community cannot tolerate. Of course, if it becomes necessary here in the interests of the community to take strong action similar to the French Government's against combinations of trade unions—not against legitimate trade unions—it will have to be done. But there is a large amount of live common-sense in our trade unions, and we hope of sufficient strength to prevent any active attempt on the part of the extremists to override the decisions of the elected representatives of the people. The trade unions are only representatives of sections of the people, and have no right to speak, act, and determine for the whole nation, which is a right some of the ultraists arrogate to themselves. Certain it is if these men are allowed to gain the upper hand, and achieve a temporary success, the permanent injury will be to the trade union movement itself, and not to the country at large.

The Bill.

There is not much time left now if the Bill to give relief to the gas industry is to be introduced by the Board of Trade before Whitsuntide. Up to last Tuesday's meeting of the Central Executive Board of the National Gas Council, the Chairman (Mr. D. Milne Watson) hoped the initial move would be made before the adjournment of Parliament for a brief holiday. On that occasion, he was able to give the members some general indication as to the proposals in the Bill. Evidently those present were gratified with the information, for a vote of thanks was passed to Mr. Milne Watson for the very great services he had rendered to the industry in this connection.

Specifying Gas-Fittings.

The Central Executive Board of the National Gas Council have been considering the question of statutory powers being obtained by gas undertakings to enable them to control the sizes of gas-supply pipes and the method of installation in all new houses, and the adoption of a standard specification. A Committee has been appointed to go through the model clauses to see what amendments would be necessary. Mr. R. J. Rogers, of Birmingham, has been for some time past championing the right of specification and inspection of piping. There is precedent for this of very long standing. Turning up but one page of our review of the Gas Acts in the autumn of 1902, it is seen that, in dealing with the Barking Gas Act, the remark is made: "Consumers' fittings may be specified." The same observation appears in the references to the Broadstairs Act, the Chigwell, Loughton, and Woodford Act, and the Longwood Gas Act.

Rubbish in Coal.

The South Wales miners are now starting a fresh line of agitation. They want to abolish piecework—the only method that offers miners a direct inducement to increase production. In this connection, the House of Lords have given an important decision in a test appeal as to deductions for stone and dirt in arriving at the earnings of miners who are paid by weight—that is to say, the pieceworkers. It is a pity that the decision does not cover the payments to miners whose wages are based on time; and then we might get some better relief from a condition that has the last few years so greatly developed to the detriment of the entire country. The appellants were the Coltness Coal

and Iron Company, Ltd. The facts were simply these: The weigher at the colliery made an average deduction of ½ cwt. from each 10 cwt. got by miners at seams which were known to be particularly dirty. It was contended that the method of determining the deductions—not being agreed to by the persons employed at the mine—was illegal; but the Colliery Company submitted that the doctrine of average was not only legitimate, but necessary. The Court of Session in Scotland was in favour of the miners; but the House of Lords has reversed the decision. Viscount Finlay held that, if deductions were not made on the basis of average, the amount to be paid the miners could only be determined by a method which would stop the working of the colliery; and he could see no warrant for the view adopted by the Court below that a man was entitled to be paid on the whole contents of a hutch, including what is admittedly not coal. That Viscount Cave and Lords Dunedin, Atkinson, and Moulton concurred forms a strong ratification of the principle laid down by Viscount Finlay. It is noticed that the Carmarthen Corporation have decided to send a protest to the Coal Controller against the rubbish sold to them as coal. The Coal Controller must have in his possession quite a pile of such protests. In this Carmarthen case, the colliery companies disclaim all responsibility. It is stated that some trucks of coal have contained as much as 10 p.ct. of stones, and 15 p.ct. of slack, and that during wet weather trucks journeyed backwards and forwards with a layer of caked rubbish in the bottom which was never removed, but which was paid for each time. Questions were to be asked in the House yesterday as to the quantity of slate and stones in the coal supplied to London householders. The public are now moving; and so perhaps something will be done to remedy a disgraceful condition of things.

Salary Increases for Clerical Staffs.

For this class of worker in gas undertakings, some guidance as to a scale of increase in salaries in connection with the higher cost of living may be gained from an agreement which has been reached in connection with the salaries of civil servants. The scheme is based on a percentage increase in the cost of living of 130, and provision is made for a periodic revision based upon the average of the official cost of living figures for the preceding period—the bonus rising or falling by 1·26th for each variation of five full points in the cost of the living figure. The proposals may be summarized as follows: (*a*) Where the ordinary rate of remuneration on a pre-war basis does not exceed 35s. a week (£91 5s. per annum), 130 p.ct. of the ordinary remuneration. (*b*) Where the ordinary rate of remuneration on a pre-war basis exceeds 35s. a week, but does not exceed £200 a year, 130 p.ct. on the first 35s. a week, and 60 p.ct. on such amount of ordinary remuneration as is in excess of 35s. a week. (*c*) Where the ordinary rate of remuneration on a pre-war basis exceeds £200 per annum, 130 p.ct. on the first 35s. a week; 60 p.ct. on the next £108 15s. per annum; and 45 p.ct. on such amount of ordinary remuneration as is in excess of £200 per annum up to £500 per annum.

Bettering the Load Factor.

Mr. J. H. Gumz, Engineer of the Industrial Gas Department of the Public Service Company of Northern Illinois, contributed, at the recent meeting of the Illinois Gas Association, some remarks on the advantages of industrial gas as a load factor. He argued that, though the profit on the sale of a stove might be larger than that on (say) a candy furnace, it must not be forgotten that the really important thing to the undertaking was the sale of the gas used by the appliance, and not the profit derived from the sale of the appliance itself. The confectioner would average a monthly bill of $10 to $15 on $1 gas, as against $3 or $4 from the stove. But in spite of this, the gas man goes ahead and sells stoves, increasing his peak load all the time, and lets this good off-peak business go, merely because he does not make a large profit on the appliance. It is, of course, essential to continue the sale of gas-stoves; but if one-tenth of the time and effort expended on these sales was devoted to lining-up so-called industrial business, the results would be astonishing. Giving an example from his own personal experience, he said he sold six burners which had a maximum capacity of 3000 c.ft. per hour, and an average running capacity of about 2000 c.ft. per hour. The total cost of these burners was less than $100, which would perhaps compare with the price of a good stove to-day; but what a difference would be found if they looked at the revenue derived from the two. His calculation is that the gas-stove uses 2000 c.ft. a month; while the $100 worth of burners consumes 400,000 c.ft., or 200 times as much.

PERSONAL.

Mr. ALEXANDER MACKAY and Mr. JOHN MACKAY have tendered to the Board of Messrs. Alder & Mackay, Ltd., their resignations as Life Directors, on account of ill-health; and the resignations have been accepted with deep regret. To fill the vacancies, Mr. THOMAS GLOVER, formerly Managing Director of Messrs. Thomas Glover & Co., Ltd., and Mr. WILLIAM GRANT, the Secretary of the Company, have been appointed to the Board. Mr. JAMES HUTTON will continue to act as Managing Director, and will become Chairman of the Company; while Mr. Grant (who is Mr. Alex. Mackay's son-in-law) will continue to act as Secretary.

Mr. S. HALL, of the Pontefract Corporation Gas Department, has been engaged for a term of three years as Assistant Engineer and Mechanic Erector to Pleno, Ltd., of Nuneaton. Previous to his appointment at Pontefract last July, Mr. Hall occupied the position of Foreman Mechanic to the Corporation of Birmingham Gas Department. He holds the highest certificates (Board of Education and City and Guilds of London Institute) in "Mechanical Engineering;" and he has had considerable experience in colliery and coke-oven work.

OBITUARY.

The death occurred suddenly, from a heart attack, last Wednesday, at his residence in Sunderland Road, Forest Hill, of Mr. CHARLES MAGNUS OHREN, who from 1893 to 1912 occupied the position of Secretary to the South Suburban Gas Company. In June of the latter year he retired on pension, at the age of 59, from considerations of health. It will be much regretted that he did not live longer to enjoy the leisure which he had earned by forty-four years' service with the undertaking. Previous to becoming Secretary, he was for many years Assistant to his father, Mr. Magnus Ohren.

NATIONAL GAS COUNCIL.

Meeting of the Central Executive Board.

A MEETING of the Central Executive Board of the National Gas Council was held on Tuesday last, at No. 30, Grosvenor Gardens, S.W.—Mr. D. MILNE WATSON in the chair.

The Chairman announced that the promised Government Bill was expected to be introduced before Whitsuntide, and he gave an outline of the proposals contained in the Bill. A vote of thanks was passed to the Chairman for the very great services he had rendered to the industry in this connection. A recommendation from the Management Committee of the Manchester District, suggesting the steps which might be taken with advantage by each District Executive Board in connection with the Bill, was adopted.

The increase in the price of coal was referred to, with the levelling-up of "industrial" and "domestic" coal, and the consequent disappearance of the 10s. rebate, as from the 12th inst. The unfairness to gas-works undertakings of these capricious mid-quarter alterations was deprecated; and it was resolved to communicate with the Coal Controller to this effect.

It was thought that the time had come when the gas undertakings in the South of England, which had up to now been made to bear the onus of seaborne coal that the Government had thought fit to divert to this quarter, should be relieved of the burden; and with a view to remedying the grievance and securing to gas-works their fair share of suitable coal it was decided to demand direct representation by gas undertakings on the various District Coal and Coke Supply Committees.

A letter from the District Coal and Coke Supplies Committee for South Wales and Monmouthshire to gas undertakings in their area was reported, suggesting that gas undertakings should issue a circular to consumers on the following lines:

(1) Pointing out that the quantity of coal available for gas-making purposes was much less than a year ago.
(2) Requesting consumers to restrict the use of gas as much as possible.
(3) Warning them that, unless the suggestion was carried out, there would be great risk of the stoppage of steel works and the failure of the gas supply.

Gas undertakings were also requested to restrict the manufacture of coal gas and to make as much oil gas as possible. It was pointed out by representatives on the Central Executive Board that gas undertakings were given no assistance by the District Coal and Coke Supplies Committee in obtaining suitable gas-making coal, and no proposal was made as to the supplies of oil, which was extremely scarce, and prohibitive in price.

It was reported that certain undertakings were unable to obtain export licences for coke; and that this placed them at a disadvantage compared with their neighbours who were able to export. It was decided to refer the question for consideration by the District Executive Boards.

With regard to the proposed corporation tax, it was announced that the Council were taking steps with a view to statutory gas undertakings being excluded from the tax.

The increase in the stamp duty payable on the amount of

capital authorized, and its effect upon the gas industry, was discussed.

In connection with the new housing schemes now in progress, a suggestion was put forward that gas undertakings should be given statutory powers to enable them to control the sizes of gas-supply pipes and the method of their installation in all new houses, and that a standard specification should be adopted. A Committee was appointed to go through the clauses relating to the gas industry in the Model Bill, and to make recommendations as to any amendments which were required.

In order to be kept in closer touch with matters connected with the revision of railway rates, the Council decided to become members of the Traders' Traffic Conference.

ELECTRICITY SUPPLY MEMORANDA.

Rejected.

The promoters of the Electricity Bill which sought financial relief have been unlucky. It was a joint promotion by the Edmundson's Electricity Corporation, the Urban Electric Supply Company, and the Penzance, Ramsgate, Ilfracombe, and Camborne Companies; and the House of Lords Committee decided against the promoters, and reported to the House that it was not expedient to proceed with the Bill. This decision we feel confident, was not arrived at on the merits of the case; but rather, we imagine, on the ground that this is a matter that should come within the purview of the Electricity Commissioners, and should be dealt with by them. The Commissioners reported against the Bill proceeding; and as the Lords Committee had heard what the promoters had to say, but not the opposition, it seems fairly safe to conclude that their lordships were rather inclined to the view that the Commissioners and not the Committee were the right persons to adjudicate in this matter, so that something like uniformity might be obtained, inasmuch as it is quite obvious that, if the concerns mentioned find it necessary for their salvation to obtain these powers, there are many other electricity suppliers in the same street. It will now be for the electricity companies to stir-up the Commissioners to the needs of the situation, and get them to promote legislation which can be applied to all needy undertakings. What the promoters of the Bill asked for was a maximum price of 1s. 2d. per unit, with a minimum 6 p.ct. dividend, which should only be increased if the price fell below 1s.—that is tc say, from 1s. to 1s. 2d. would be a neutral zone—and then the dividend should be increased by ½ p.ct. for every ½d. reduction in the price per unit. Of course, the promoters have taken a modified pattern from what gas companies have been doing for the past 45 years, and their proposal has some identity with that of the South Metropolitan Gas Company in their Bill which has also been discussed before a Lords Committee, with the result shown in our "Parliamentary Intelligence" last week. It will be for the Electricity Commissioners to make the next move for relief.

Difficulties of the Situation.

The "Electrical Review" and "Electrical Industries" are quite wrath over the rejection of the Bill. Perhaps it will prove to have been a wise step if the companies concerned press the Electricity Commissioners to get a "move-on" in the matter as early as possible. The "Review" gives vent to its feelings by asking: "Are these companies to be compelled to fulfil their statutory obligations and yet to be deprived of the possibility of paying a modest return on the capital which they have invested?" Also: "What else is this but a policy of confiscation?" "Electrical Industries" says the report of the Commissioners to the Committee was "conceived on the old lines of pedantry and blank negation, which made the Board of Trade a curse to the supply industry." Judging alone from this one performance, our contemporary is of opinion that the supply undertakings must make up their mind that the Ministry of Transport and the Electricity Commissioners "are going to meet them with the same respect for precedent, the same polite indifference to their prosperity, and the same punctilious regard for legal formalities as characterized the Board of Trade." Our contemporary appears to be labouring under a fit of impetuosity, and has made up its mind a bit hastily regarding the action of the Electricity Commissioners. Electricity companies have a good case, just as have gas undertakings, for revision of the terms upon which they do business. Modern conditions, it is manifest, are worse than ever for the making of a respectable living by a good many electricity concerns in purely residential areas, where the business is limited almost entirely to lighting. In the old days of the carbon filament lamp, the consumption was 3 to 6 watts (at various stages of lamp life) per candle-hour. Now there is the metal filament lamp with its 1·25 watts per candle-hour, and the gas-filled lamp with its 0·65 (or so) watt consumption per candle-hour. Some of the companies whose business is mainly lighting were doing a more profitable business in the carbon filament days than now, even with a maximum price of 8d. per unit. The earlier closing hours for shops, the 47-hour week in industry, and the introduction of summer time have helped to pile-up adverse conditions, and to place upon the winter months the obligation of earning capital charges and much else to keep business going. Even if the residents were foolish enough to let an electricity concern do some business in heating, this would only mean the sale of extra units in winter at a low price, while the generating machinery, fuel, and so on cost just as much for electricity heating as for lighting. All this plant would be more or less unproductive during summer, except in the matter of capital charges and depreciation. The case for considerate treatment in respect of a higher maximum price is a strong one; and those undertakings that pocket their pride, and boldly acknowledge the difficulties inherent to their business—apart from the general ones of labour and material costs—will make out the best case.

The "Review" again Trips Up.

On April 20 the "James Forrest" lecture was delivered by Sir Dugald Clerk before the Institution of Civil Engineers. By May 7, the "Electrical Review" was able to publish a brief comment, which is mainly remarkable for inappreciation of what Sir Dugald said, and for the serving-up of old platitudes concerning the marvellous accomplishments of electricity. As a criticism of the whole lecture it is feeble; and much of what is said is erroneous. It is excellent testimony to the solidity of the case put forward by the eminent engineer, as, if the article is the best the "Review" can do in the way of depreciating the case, then the latter has fine strength. The assertion is made that Sir Dugald shows, *from his own figures*, that if the scheme is carried out on the [Coal Conservation] Committee's lines for the supply of power, there will be an annual saving of 29·9 million tons as soon as all private installations and the majority of the existing generating stations have been replaced by super-stations. Quite contrary to these being Sir Dugald's own figures, he commences the calculation with the words: "If we assume with the Coal Conservation Committee that super-stations in the early future will generate 1 E.H.P. hour on 1·56 lbs. of coal." Thus the basic figure is not Sir Dugald's; and the "Electrical Review" knows perfectly well that the 1·56 lbs. of coal per E.H.P. is not a condition practically obtainable throughout the country—super-stations notwithstanding. It is, or it would be, the height of absurdity for the "Review" to adopt anything of the kind as a generally realizable result. Sir Dugald does not do so; he only uses the Power Committee's figure for the purpose of making a calculation. That he gives only the figure the weight that assumption will permit is proved when he says later that "some *small* fuel savings are possible by limiting the use of electricity to light and power." Our contemporary does not credit Sir Dugald with much common sense by thinking that he would have made the latter statement when "from his own figures" he had shown the possibility of an annual saving of 29·9 millon tons of coal when certain things materialized, though never likely to do so as a universal thing. Sir Dugald will be allowed the pleasure, if he desires it, of meditating over the common sense of a technical paper that treats its readers to such misstatement and bad reasoning.

Heat Production.

On the question of heat production, our contemporary does not appear to know why Sir Dugald assumes that the gas-works in existence use 18·8 million tons of coal to generate heat The answer is simply because the Board Trade returns give the tonnage carbonized by all the statutory undertakings, and it is easy enough for Sir Dugald to make an approximate allowance for the non-statutory ones. There is no mystery about it. Then it remarks: "Assuming that to produce and distribute the same quantity of heat electrically would consume 2·65 times as much coal, he finds that to supply both power and heat electrically would require 18·8 + 49·8 = 68·6 million tons, instead of the present (assumed) total of 67·5 millions." This leads our slow-to-comprehend contemporary to say: "By this remarkable process, he arrives at the conclusion that the super-station scheme is unsound, although he has demonstrated [which he has not done other than by taking the Coal Conservation Committee's figures] that a saving of about 30 million tons of coal would be effected by the scheme if electricity were used for everything but heating and railways." Where in the lecture is it shown that Sir Dugald accepts this saving as something ever likely to be universally realized? The most remarkable aspect of the comments is the way the "Review" deals with the matter. Then there is a reference to a forecast or an assumption in what Sir Dugald says as to higher efficiencies of gas production, distribution, and use. These higher efficiencies are here to-day, are being obtained, and the necessary plant for manufacturing the gas is being adopted—without constructing super-stations—as opportunity permits at works of different sizes. Finally our contemporary blows a big triumphant blast. Everybody is wanting electricity—so it says—for light, power, and heat. If this is so, it is a mystery whence come the big increases in consumption that the gas industry is booking, and was booking all last year. Facts are facts; and bombast will not dislodge them. Even our contemporary admits that facts are stubborn things; and we have a whole shoal of facts in the gas industry as to higher efficiencies, both in respect of coal use and gas consumption. By the way, we see that "Electrical Industries" on May 5, found space for between two and three columns of words on the lecture. Perhaps now that it has let-off a little steam, it will turn its attention to showing where Sir Dugald's figures are wrong.

Housing Items.

We observe that, owing to the heavy cost of cables, estimated at £5528, the Chesterfield Town Council have abandoned the proposal to supply electricity to houses to be built on the

Boythorpe Estate. Correspondence has been proceeding in the "Electrical Review" upon the "wiring of small houses." In a letter by one writer, he refers to the costs per point of lighting, and mentions the houses being erected at Wormwood Scrubbs. An outstanding paragraph in the letter is this: "Incidentally, I may mention that these houses are apparently not to be electrically lighted, as they have already been tubed for gas."

Linking-Up in the Severn Valley.

The first grouping scheme for generating purposes that the Electricity Commissioners will be called upon to consider is the Lower Severn Valley one. The area is a large one—including Bristol, Bath, Swindon, Cheltenham, Hereford, Monmouth, Taunton, and Chepstow. The idea is to link-up the centres of electric power throughout the area with a view to the promotion of economy and the pooling of reserve plant. The scheme is concerned with power only. In connection with it, it is pointed out that cables to carry 7500 KW. cost roughly £10,000 a mile, and the laying of them and "picking-up" is also a costly operation; so that, in devising a linking-up scheme, it is very necessary that it should be done on a scale that will be big enough to include future expansion, and not on one that is just sufficient for the demands of the moment. Somebody in the meantime has to pay the capital charges. Objections to the scheme, which may be raised by municipal bodies and others, must reach the Ministry of Transport by the end of July. It is probable that whatever may result from the local inquiry into any objections, one large new power station will be put up in the area.

"Lest We Forget."

The words "All change here!" averted a panic, and probably much worse, on the Bakerloo Railway on May 7, when a Tube train caught fire. About six o'clock (says the "Globe") a crowded train entered Paddington Station. Smoke was issuing from the fuse-box underneath the first coach. The station-master at once rushed to cut-off the electric current; and as the train came to a standstill passed down the word to the conductors to shout out "All change here." Before the train could be cleared of passengers, the station was rapidly filling with smoke. There followed a rush up the moving stairway; and the trainload of 300 people was clear of the station within three or four minutes. The fire was then quickly extinguished.

The Dutch Lamp.

In our reference to the report of the Profiteering Committee who investigated the position of affairs in the electric-lamp industry, allusion was made to the transactions of the Electric Lamp Manufacturers' Association in respect of some 1¼ million gas-filled lamps bought in Holland. The lamps, the Committee alleged, were purchased in Holland at 3s., and sold in this country at 12. 6d. each. The Committee alleged that the profits on the lamps amounted to something like £280,000 over and above what would appear to be reasonable. Sir Robert Horne stated in the House a few days ago that, in view of the new information furnished by the Association since the findings and decisions of the Committee were published—indicating that the lamps referred to were sold not to the public but to Government Departments, controlled factories, shipyards, &c., at a price of about 8s. 3d. each—he understood that the Committee now wished this passage to read as follows: "The importers of these lamps made profits of something like £140,000 over and above what would appear to us reasonable." It is only fair, having referred to this matter, that the amendment should be published.

Efficiency of Boiling Operations.

The "Electrician," in its "Heating and Cooking Notes," has been referring to the efficiency of boiling operations with the enclosed type of hot-plate, the radiant or open-type hot-plate, and the self-contained utensil. The efficiency—based upon the electrical heat energy, and not upon the coal used in generating the electricity—is shown in a diagram. On this basis, the self-contained utensil is seen to be the most efficient—it is, in fact, twice as efficient as either of the hot-plates. The self-contained utensil starts at just under 90 p.ct. for a pint of water to 95 p.ct. for four pints. The radiant hot-plate starts at about 38 p.ct. for one pint, and does not get higher than 42 p.ct. for four pints. The enclosed hot-plate starts very low—at about 24 p.ct.—for one pint, but runs up to 45 p.ct. for four pints. Referring to the self-contained utensils being approximately twice as efficient as hot-plates, our contemporary mournfully says: "Unfortunately, the cost of purchasing a set of self-contained kettles, saucepans, steamers, &c., is considerably more than the cost of a range, *plus* the cost of a set of ordinary utensils." We need not comment on a well-known fact.

Fourteen Research Associations have already been approved by the Department of Scientific and Industrial Research, and have received licences from the Board of Trade. Others which have been approved, but have not yet received licences, include the British Refractory Materials Research Association.

A memorial which has been erected in front of the Livesey Hall at the Lower Sydenham works of the South Suburban Gas Company, by the Directors, officers, and workmen, in commemoration of the services rendered by the co-partners and employees in the war, is to be unveiled by Lord Robert Cecil, K.C., M.P., on Friday afternoon, June 4.

ECONOMY OF LOW-TEMPERATURE GENERATORS.

The following interesting article appeared in a recent number of "Engineering."

The ordinary Mond gas generator is much better adapted to the recovery of ammonia than to the recovery of the tar; and the tar produced is poor in lubricating oils, because the tar liberated is partly decomposed by passing through layers of fuel at high temperature. This fact became very important in Germany during the war; and the German Institute for Coal Research at Mülheim-on-the-Ruhr, devoted its main attention to the preparation of a low-temperature tar of higher lubricating value.

While Franz Fischer and W. Gluud worked out the problem of low-temperature carbonization of coal and lignite with special regard to a high yield of "urteer"—*i.e.*, the tar in the original condition—Dr. Heckel, the Chemist of the Deutscher Kaiser Colliery at Bruckhausen, found means of extracting lubricating oils from this low-temperature tar. The economy of the gas producer was thus put on a different basis; and the present aspect of the problem was reviewed at length on behalf of the Verein deutscher Eisenhüttenleute, by Dr. E. Roser, in "Stahl und Eisen" for March 11, 18, and 25 last.

The report refers in particular also to the experimental runs conducted for three years in a gas-producer plant at the works of Thyssen and Co., of Mülheim, but deals with the general economic considerations rather than with technical details. The plant consists of fifteen gas producers (system Thyssen) provided with revolving grates, to which air and steam are introduced from below. The tar vapours are, in their removal, drawn through cooler, not through hotter layers.

Mention is also made of a Holzwarth gas-turbine for 700 KW., the spent steam of which is to be sent into the gas-generators to raise the ammonia recovery. Whether this gas-turbine will more effectually overcome the very serious difficulties that the efficient working of gas-turbines causes than did the turbine which Holzwarth described before the war, remains to be seen. But the economic questions discussed by Roser are interesting. In 1914 tar from gas generators fetched 40 marks per ton at the best; and a ton of coal yielded 50 kg. of tar, worth about 2 marks. It was more advantageous then to work for ammonium sulphate than to push the tar yield. The new low-temperature tar proved much more valuable; it contained 40 p.ct. of light oils (against 17·5 p.ct. in the old tar); 17 (against 6) p.ct. of lubricating oils; no naphthenes, anthracene, &c., (against 11 p.ct.); 2 (against 0) p.ct. of paraffin and fats; and 40 (against 39) p.ct. of pitch. It was, moreover, found that the valuable properties of the new tar were practically retained when the coal was mixed with half its weight of lignite.

Lignite is one of the most important mineral resources of Germany. By itself, the lignite yielded 25 kg. and more tar, free of water. In the mixtures of coal and lignite the tar yield rose to 75 kg. per ton of fuel; and the value of the tar (up to 16 marks a ton in pure coal) to more than 6 marks. Roser appears to disregard, in his comparative estimates, the extraordinary rise in prices that Germany has experienced during and after the war, though he refers to changes in official dues. He deals, moreover, with specifically German conditions. But one may probably accept his conclusion that, with high coal prices, low-temperature carbonization combined with recovery both of tar and ammonia is economically advisable, when the gas is to be utilized both for power and for heating purposes.

Testing and Stamping of Meters.—There is to be a general meeting of members of the Association of Statutory Inspectors of Gas-Meters, in the County Hall, Spring Gardens, London, on June 2, at 10.45 a.m., at which authorities administering the Sale of Gas Act, 1859, the Board of Trade, the Institution of Gas Engineers, and the Society of British Gas Industries have expressed their intention of being represented, to discuss a paper presented by the General Purposes Committee, on amendments considered to be desirable in the law relating to the testing and stamping of gas-meters.

Society of Chemical Industry and Bye-Product Coking.—The papers to be submitted at the annual meeting in Newcastle-on-Tyne from July 13 to 16 of the Society of Chemical Industry will include the following series relating to bye-product coking: "The Coke-Oven," by Mr. W. A. Ward; "Corrosion of Coke-Oven Walls," by Mr. W. J. Rees; "Recovery of Bye-Products," by Dr. E. W. Smith; "More Economical Utilization of Coke-Oven and Blast-Furnace Gases for Heating and Power," by Messrs. G. W. Hewson and S. H. Fowles; and "Coke-Oven Gas for Towns' Supply," by Mr. H. E. Wright.

Fire-Clay Refractories.—In the course of a paper on this subject read before the Birmingham Metallurgical Society, Mr. P. S. Devereaux said it was commonly supposed that the addition of silica to a fire-clay made it more refractory, when, as a matter of fact, the softening point was lowered. The great trouble with magnesite bricks was their tendency to crack, flake, and spall at high temperatures. Magnesia from calcined magnesite occurred in two different forms, one of which had a low specific gravity of 3·2, and was more chemically active than the other form, with a specific gravity of 3·7. There was thus a shrinkage caused by this change from low to high specific gravity which should be effected in making the bricks.

INSTITUTION MEETING PROGRAMME.

June 1, 2, 3.

The Annual General Meeting of the Institution of Gas Engineers will be held at the Institution of Mechanical Engineers, Storey's Gate, Westminster, on Tuesday, Wednesday, and Thursday, June 1, 2, and 3, under the presidency of Sir Dugald Clerk, K.B.E., F.R.S. The chair will be taken at 10.30 on Tuesday, and 10 o'clock on Wednesday and Thursday.

On Tuesday, after the address by the President, there will be presented the annual report and accounts; the reports of the Refractory Materials Research Committee (by the Chairman, Mr. Broadberry)—(*a*) "The Casting of Gas-Retorts," (*b*) "Some Comparative Tests of Machine-Made and Hand-Made Silica Bricks," (*c*) "The Specific Heats of Refractory Materials at High Temperatures;" the report of the Life of Gas-Meters Research Committee; "The Internal Corrosion of Mains, Services, and Meters" (by Mr. J. G. Taplay, Chemist to the Committee); and the report of the Institution Gas Research Fellowship; "Some High-Temperature Reactions of Toluene and Benzene" (by Dr. S. F. Dufton and Prof. John W. Cobb, C.B.E., B.Sc. In the evening there will be a reception and dance, by invitation of the President and Lady Clerk, at the Royal Institute of Painters in Water Colours, Piccadilly.

The proceedings on Wednesday will open with the meeting of the Benevolent Fund; and the rest of the sitting will be devoted to the third report of the Gas Investigation Committee.

The following four papers will be presented and discussed on Thursday: "Carbonization," by the Society of British Gas Industries; "Oxygen in Gas Production," by Mr. H. J. Hodsman, M.Sc., and Prof. John W. Cobb, C.B.E., B.Sc.; "Electricity Supply by Gas Companies," by Mr. Joseph Fisher, of Tottenham; "Contemplations on the Report of the Fuel Research Board," by Mr. Godfrey Warburton, of Tottenham.

ANNUAL REPORT OF THE INSTITUTION COUNCIL.

The Council of the Institution of Gas Engineers have presented their report upon the work of the year 1919-20.

Membership and Deaths.

At the close of the year 1919, the total membership was 879, as compared with 854 the previous year.

The Council regret that the deaths of the following have to be recorded:

Honorary Member.—A. G. Vernon Harcourt, Ryde.

Members.—J. R. Frith, Runcorn; C. J. R. Humphreys, Lawrence (Mass.); John T. Jolliffe, Ipswich; James Lowe, Weymouth; William B. Mimmack, Pembroke Dock; William North, Stourbridge; Henry H. Salomons, Brussels; Bousak K. G. Schieldrop, Bergen, Norway; Harold O. Timmins, Hindley; Alfred West, Oakenshaw; and John F. West, Stockport.

Associate Member.—Alpin MacGregor, Llandudno.

Distinctions for Members.

During the year under review, the distinction of the Order of the British Empire has been conferred by the King on the following members of the Institution: Dr. Charles Carpenter, London; Mr. Thomas Glover, Norwich; and Capt. H. Riall Sankey, C.B., London—as Commanders (C.B.E.). Mr. J. H. Canning, Newport (Mon.); Mr. E. V. Evans, London; Mr. Alex. Wilson, Glasgow; Mr. Charles Wood, Bradford; and Mr. John Young, Hull—as Officers (O.B.E.). Mr. William Wilson, Burton-on-Trent—as Member (M.B.E.).

Lord Moulton (Past-President) has been created by the French Government a Grand Officer, Etoile Noire, for valuable services rendered to the cause of the Allies during the war. It may be added that this honour is reserved by the Republic for those distinguished persons other than Frenchmen who have rendered services to France.

The Honorary Degree of Doctor of Science has been conferred on Sir George Beilby (hon. member) by the Durham University.

Meetings Last Year.

The fifty-sixth annual general meeting of the Institution was held on May 27, 28, and 29, at the Institution of Civil Engineers, under the presidency of Mr. Samuel Glover, of St. Helens.

In October, from the 16th to the 18th, on the invitation of the Société Technique de l'Industrie du Gaz en France, the Institution visited Paris and the Marne and Somme battlefields; the occasion being the reception of Allied gas engineers. A cordially fraternal welcome was extended, for which, on behalf of the British guests, the Council desire to record their warmest acknowledgments.

National Gas Council.

The following were appointed to represent the Institution on the Central Executive Board of the National Gas Council for the year 1919-20: The President (Sir Dugald Clerk), the Vice-Presidents (Messrs. Thomas Goulden and Thomas Hardie), and the Immediate Past-President (Mr. Samuel Glover).

Affiliation.

The District Associations affiliated with the Institution were represented on the Council during the year 1919-20 as follows:

Eastern Counties Association	Mr. H. R. Wimhurst.
Manchester District Institution	Mr. G. S. Frith.
Midland Association	Mr. A. T. Harris.
North British Association	Mr. William Wilson.
North of England Association	Mr. Norman S. Cox.
Southern Association	Mr. Frank Livesey.
Wales and Monmouthshire District Institution	Mr. J. Mogford.

Fuel Research Board Inquiry.

The Institution have assisted in the further consideration of the question of gas standards, upon which the Board of Trade and other Departments concerned asked the Fuel Research Board to advise them. After several conferences on the subject, the Fuel Research Board issued a statement [see "Journal," Nov. 4, 1919, p. 237] that, as a result of a conference between the consumers, local authorities, and gas undertakings, the recommendations of the Fuel Research Board [see "Journal," April 29, 1919, p. 240] were accepted, with certain amendments.

The Board of Trade, in fulfilment of a promise made some time ago, are about to introduce into Parliament a Bill based upon these recommendations.

Recording Gas-Calorimeters.

In view of the proposals contained in the report to the Board of Trade of the Fuel Research Board as to the introduction of a calorimeter of a standard type capable of continuously recording the calorific value of the gas distributed, the Council have appointed a Committee, consisting of the following, to investigate the subject: The President, Vice-Presidents, and Hon. Secretary (*ex officio*), and Messrs. A. E. Broadberry, Samuel Glover, Frank Livesey, and Samuel Tagg. In their work, the Committee have obtained the co-operation of the Gas Research Sub-Committee of the Gas Investigation Committee; and arrangements have been made for experiments to be carried out. The Committee desire to acknowledge their indebtedness to Mr. John F. Simmance, of Messrs. Alexander Wright & Co., who has demonstrated to them the working of various types of instruments.

Sampling and Testing of Spent Oxide.

The Council have had under consideration standard methods of sampling and testing spent oxide, which were suggested by the buyers of spent oxide, and were referred to the Institution by the National Gas Council.

[The methods approved and recommended for adoption were set out on p. 141 of the "Journal" for the 20th ult.]

Gas Investigation Committee.

The Research Sub-Committee, under whose direction the work is being carried out, consists of: Prof. Arthur Smithells, C.M.G., F.R.S. (Chairman); representatives of the University of Leeds, Prof. J. B. Cohen, F.R.S., Prof. John W. Cobb, C.B.E., B.Sc., F.I.C. (Hon. Secretary), and Mr. G. R. Thompson, B.Sc.; and representatives of the Institution of Gas Engineers, Messrs. John Bond, O.B.E., J. H. Brearley, E. W. Smith, D.Sc., F.I.C., and Charles Wood, O.B.E. Mr. Lawrence Hislop was co-opted a member of the Research Sub-Committee for the purpose and period of research work at Uddingston.

The Research Chemists are: Mr. James W. Wood, M.Sc. (Tech.), A.I.C., on the relative efficiencies in use of different grades and compositions of gas; Mr. A. Parker, D.Sc. (Birmingham), M.Sc. (Manc.), A.I.C., on the comparative economies in production of different grades of gas. The Research Assistants are: Mr. H. Kerr, Diploma Fuel and Metallurgy (Leeds), and Mr. F. S. Townend, B.Sc. Eng. (Lond.).

The constitution of the Research Sub-Committee has remained unaltered during the year.

At Birmingham, Mr. James W. Wood has proceeded in the investigation on the relative efficiency in use of different grades of gas to the examination of the effects produced by the direct addition of nitrogen, carbon dioxide, and air to coal gas, in order to secure more precise information than has hitherto been available on the influence of inert constituents. The results obtained have already proved of service in the conferences with Sir George Beilby and the Fuel Research Board which preceded the issue of recommendations to the Board of Trade on new statutory regulations for public gas supply.

Numerous tests carried out by Mr. Wood on coal gas lowered in calorific value by the addition of inerts, or by admixture with water gas, have made it possible to state the influence of such additions or admixture more precisely than has ever been possible before. A large number of tests have been made with the upright incandescent mantle lighting burner as being a use for gas well calculated to display differences in efficiency and behaviour. It was known from preliminary experiments that in the use of gas for heating (the relative importance of which is increasing so rapidly) the difference in behaviour between gases of different calorific values and compositions was very much less marked. This point has been brought out again very clearly by a series of experiments, which Mr. Wood carried out, on the behaviour of different gases in a gas-fire, the results of which will be reported to the members at the forthcoming annual meeting.

The parallel investigation into the efficiency of processes for manufacturing gas was commenced at Uddingston, and will be reported upon at the Institution's forthcoming meeting. Dr. A. Parker has been in immediate charge of the tests made there, assisted by Mr. H. Kerr, Mr. F. S. Townsend, and (for a short period) Mr. A. H. Clucas. Dr. Parker has been responsible for the chemical work, for the making of records, and observations of plant conditions, and for obtaining reliable data which could be used confidently in the construction of thermal and chemical balances. The actual control of the plant, temperature of the settings, pressure at the retort-house governor, rate of extraction of coke, &c., have been under the control of Mr. Lawrence Hislop and his staff. From difficulties which have been experienced by all who have been under the necessity of analyzing critically published results on the process of steaming vertical gas retorts, it was plain from the outset that the utmost care should be exercised in the carrying out and interpretation of these tests; and no results obtained have been accepted unless figures obtained in the ordinary way by direct measurement and weighing were confirmed by calculation of the chemical and thermal balances. This statement will be best understood by a study of the results given in the report.

Following upon his resignation from the position of Chief Chemist to the Birmingham Corporation Gas Department, the Council regret that Dr. E. W. Smith has tendered his resignation from the Committee. In accepting it, they wish to record the expression of their appreciation of the valuable help he has given during the whole course of the investigation.

Institution Gas Research Fellowship.

This fellowship, tenable at Leeds University, has not been held during the war; but work which had been started under Professor Cobb's direction in connection with it, on the influence of red-hot coke on the products of carbonization, was carried on during a preliminary period by Mr. Wilfred Gibson, B.Sc. (Leeds), who received for the purpose a war bursary from the Royal Society War Committee, and by H.M.I. Dr. S. F. Dufton, who received permission from the Board of Education to devote half his time over a considerable period to this work. Mr. Thomas Hanby, B.Sc. (Leeds), held the Gas Research Fellowship for three months after the conclusion of the armistice. The results of the investigation will be reported, under the head of "Gas Research Fellowship," this year to the Institution in the form of a paper by Dr. Dufton and Prof. Cobb on "Some High Temperature Reactions of Toluene and Benzene."

Corbet Woodall Scholarship.

The holder of this scholarship, Mr. L. P. Ingram, returned from the army in October, 1919, to resume his course as a student at Leeds University, and will take his degree examination in June, 1921. There has been some accumulation of funds during the war years in which the scholarship was not held at the University; and the Committee have, consequently, found themselves able to increase the amount of the scholarship for the future to £60 per annum.

Refractory Materials Research Joint Committee.

The Institution's representatives on the Refractory Materials Research Joint Committee consist of the President, Vice-Presidents, and Hon. Secretary (*ex-officio*), and Mr. A. E. Broadberry (Chairman), Major F. J. Bywater (Hon. Secretary), Prof. J. W. Cobb, Dr. Harold G. Colman, Mr. S. Glover, Dr. J. A. Harker, Mr. J. P. Leather, Dr. J. W. Mellor, Mr. W. S. Morland, Mr. H. E. Riley, Mr. S. Y. Shoubridge, and Lt.-Col. H. W. Woodall. The representatives of the Society of British Gas Industries consist of Messrs. J. Barratt, C. Brooks, Albert Cliff, G. V. Evers, C. Fagan, W. P. Gibbons, W. Oates, G. H. Pearson Perry, and Major C. W. Thomas.

The Committee report that during the year Dr. L. V. Bradshaw and Mr. W. Emery have been engaged at the Pottery Laboratory of the Central School of Science and Technology, Stoke-on-Trent, on the work of the research, under the supervision of Dr. J. W. Mellor. The work undertaken includes: (1) Investigation of the crushing strength of fire-bricks and the relation of composition and size of grog to results obtained; and deterioration in crushing strength after prolonged heating. (2) On the effect of firing temperatures of grog on the contraction of bricks. (3) Casting of gas-retorts. This subject has been thoroughly investigated, and a process discovered by means of which gas-retorts of most satisfactory texture and surface have been cast and burnt. The resulting material has received the commendation of both gas engineers and manufacturers; and retorts are being made at various works for trial on a practical scale. (4) Comparative tests of machine-made and hand-made silica bricks. (5) Specific heats of refractories at high temperatures. Reports on the last three subjects mentioned will be presented at the forthcoming annual meeting of the Institution. In connection with the casting of gas-retorts, the Institution has joined with the Lord President of the Department of Scientific and Industrial Research and Dr. Mellor in an application for a patent for the process.

The following work is in different stages of progress: Action of reducing flame on refractories; gas permeability and porosity; heat conductivity and porosity; binding cements for refractories; binding agents for silica bricks. Information has been received from the Scientific and Industrial Research Department of the Privy Council, who have contributed funds towards the cost of the Committee's research during the past four years, and at their instigation a new Refractories Research Association has been formed to promote research and other scientific work in connection with refractory materials and the trades and products connected therewith; and that, while recognizing the valuable work which the Committee have done in the past, it is not felt that Government assistance in this field of research ought to be directed to the improvement of refractory materials for all industries requiring them, and suggesting that the Joint Committee should become a Sub-Committee of the new Research Association, from which they would probably receive at least the same financial assistance as has hitherto been granted by the Privy Council. In regard to the new Research Association, representatives of the Joint Committee have had two interviews with the President-elect, Sir William Jones, for the purpose of obtaining information as to the probable status and support to be given to the Committee if they adopt the suggestions tendered; and these negotiations are not yet complete.

Life of Gas-Meters Research Committee.

The Joint Committee consists of Messrs. John Bond, A. E. Broadberry, R. E. Gibson, Samuel Glover, F. W. Goodenough, A. A. Johnston, W. E. Price, R. G. Shadbolt, and Albert Stokes, of the Institution; and Messrs. T. A. Braddock, F. G. Cockey, F. Templer Depree, A. W. Glover, Thomas Glover (London), B. R. Parkinson, W. H. Johnston, and F. R. Smith, of the Society of British Gas Industries. Mr. J. G. Taplay continues to act as Chemist to the Committee.

A Sub-Committee has been appointed to consider amendments which are desirable in the Sales of Gas Act. In connection with this matter, they are in communication with the Association of Statutory Inspectors of Gas-Meters, who also have the subject under consideration.

Corrosion of Mains and Services.

A further report is in course of preparation on the corrosion of mains and services, for presentation at the forthcoming meeting of the Institution.

Demobilization Committee.

This Committee consists of the seven District Members of Council, with Mr. Robert G. Shadbolt, who has been Chairman since the formation in 1917. They report as follows:

The work of this Committee has been a diminishing quantity during the past year, until now there remains little to occupy attention—there being very few cases on the list.

The record of known instances over the year where candidates have been placed is twelve; but there have undoubtedly been many more due directly and indirectly to the Committee's action, which are not traceable, owing mainly to the fact that many men who have secured an appointment fail to notify the Committee. In this manner, men on the list have drifted out of touch and been lost sight of.

The Committee has been in existence during the last three years; and the members feel that they have rendered a useful service in an unostentatious way during this period. But now that the necessity for their continuation has practically ceased, they recommend that such a Committee be not again appointed. While making this recommendation, they would suggest that the assistance rendered by the Technical Press of the industry be recorded and heartily acknowledged; and that the Editors of the respective organs be requested, in the interests of ex-Service men, to continue their appeals at the head of their advertisement columns of "Situations Vacant" until such time as they may be deemed no longer necessary. And, in addition, that the circular-letter which is sent from the Committee to gas authorities advertising a vacancy, be continued with suitable modification, over the name of the President for the time being.

When accepting and adopting the above report, with the recommendations it contains, the Council passed a hearty vote of thanks to the Committee for all they have done to bring-about the success of the work undertaken.

British Association Fuel Economy Committee.

Mr. D. H. Helps, the representative of the Institution on this Committee, reports:

Since the writer's last report in April, 1919, the principal work of the Committee has consisted of the presentation of a report to the British Association, and the sending of a deputation from the Committee to the President of the Board of Trade. The report deals at considerable length with the recommendations by the Fuel Research Board issued in January, 1919, in reply to the inquiry of the Board of Trade as to "what is the most suitable composition and quality of gas and the minimum pressure at which it should be generally supplied, having regard to the desirability of economy in the use of coal, the adequate recovery of bye-products, and the purposes for which gas is now used?"

Speaking generally, the report of the Committee approved the recommendations of the Fuel Research Board, although it disagreed with the Board's "apparent" endorsement of the proposition that the relative values of different grades of gases are strictly proportional to their calorific values. Also, the Committee urged the adoption of 20 p.ct. as a minimum methane content in a public gas supply intended for domestic consumption.

The writer objected (in committee) to many of the statements and conclusions enumerated in the original draft. Some of the objections which he raised to the final report are summarized below:

(1) To the reimposition of the obligation to remove sulphur compounds other than H_2S from gas.

(2) To the limitation of the percentage of carbonic oxide in the gas, as it would not be in the interests of fuel economy.

(3) To the proposed obligation to maintain a pressure of 2 in. of water in the gas at the exit of the consumer's meter.
(4) To the limitation of "inerts" to 12 p.ct., as it would hamper gas undertakings in their work, increase the cost of production, and be subversive to economy in coal consumption. To shackle gas undertakings with such a restriction might interfere with new processes likely to reduce the cost of producing gas.

Mr. Thomas Goulden and Lt.-Col. H. W. Woodall, with the writer, attended the meeting of the British Association at Bournemouth, and joined in the discussion on the Committee's report. [See "Journal" for Sept. 6, 1919, p. 617.]

On Feb. 2, 1920, a deputation from the Committee waited on the President of the Board of Trade in order to lay before him certain considerations which, in their view, should receive full weight in any legislation regulating the supply of town gas. The deputation consisted of Prof. W. A. Bone, Sir Robert Hadfield, Mr. W. H. Patchell, and Mr. H. James Yates. Prof. Bone, after calling the attention of the President of the Board of Trade to the Fuel Research Board's report, stated that the deputation agreed that the basis of charge to the consumer should be the actual number of thermal units supplied to him in the gas which passed through his meter, but asked for the substitution in the Research Board's proposal of the words, "ascertained net calorific value" of the gas, for the words "declared gross calorific value." The Professor then urged that the proportion of methane in coal gas should not be less than 20 p.ct., and the percentage of carbonic oxide not more than 20 p.ct.

Mr. Yates is reported to have stated that, in view of the Committee, the minimum number of thermal units should be not less than 450 B.Th.U. net.; and he added that if the gas industry supplied gas of lower heat efficiency, a large part of the existing gas appliances would become useless.

The writer has always to bear in mind that the members of the Committee were appointed, not in the interests of any particular industry or body, but in order to assist in the promotion of fuel economy.

The following is a list of subjects which the Committee have selected for investigation, in view of their next report:

(1) Thermal efficiencies of furnaces, heating apparatus, power generation, carbonization methods, and the like.
(2) Low-temperature carbonization.
(3) To review critically the present official methods of arriving at statistics relating to the output of coal per worker employed in British mines, compared with those in America and Germany.
(4) The question of the effect of the war upon the coal export trade.
(5) Factory fuel consumption; the organization of power production, &c.
(6) Methods of sampling coal on a large scale.
(7) Relative fuel values of coal, oil, and pulverized coal.

City and Guilds of London Institute Examinations.

As stated in the Council's last report, Mr. S. Glover, Examiner in "Gas Engineering," and Mr. Walter Hole, Examiner in "Gas Supply," consented to continue their duties for a year beyond the specified term. They therefore complete their work with the examinations of 1920. The Council express the very great indebtedness of the Institution to these members for the labour they have so liberally devoted in this important matter over so long a period.

The Board of the Institute have, on the nomination of the Council of the Institution, appointed the following: As Examiner in "Gas Engineering," Mr. Samuel Tagg, of Preston; as Examiner in "Gas Supply," Mr. H. Kendrick, of Stretford (who has resigned his position as Examiner in "Gas-Fitting"); and as Examiner in "Gas-Fitting," Mr. R. J. Rogers, of Birmingham.

Education of Gas Engineers.

The Committee appointed by the Council to consider suggestions for a revision of methods of education and examinations are continuing their work. They consist of the President, Vice-Presidents, and Hon. Secretary (*ex-officio*), and Messrs. A. E. Broadberry, J. G. Clark, J. Dickson, S. Glover, T. Glover (Norwich), F. W. Goodenough, H. C. Head, W. Hole, H. Kendrick, H. Lees, J. Paterson, and E. H. Swain.

Conferences have taken place on the subject with representatives of the Board of Education and the City and Guilds of London Institute. Considerable progress has been made in the matter, and the scheme has been placed in the hands of a Sub-Committee to deal with the details.

Offices.

Arrangements have been made for the Institution to take offices with other gas organizations at No. 30, Grosvenor Gardens, near Victoria Station. It is hoped the United States Naval Department, who now occupy these premises, will soon be in a position to vacate them in order that the Institution may be provided with rooms.

Dugald Clerk, *President.*
Walter T. Dunn, *Secretary.*

THE BENEVOLENT FUND.

The Committee of Management of the Benevolent Fund report that the income of the fund for the year ended Dec. 31 last amounted to £392, a reduction of £106 as compared with the previous year. The expenditure for the year amounted to £383, compared with £371 for 1918. Sixteen cases received assistance from the fund.

It will thus be seen that, while the expenditure has increased, the income has considerably diminished. The Committee therefore earnestly invite all members of the Institution who do not subscribe to assist in the good work which is being done by means of the fund. Their contributions will be gratefully received.

The two members of the Committee retiring in order of rotation are Mr. Alexander Masterton, of Edinburgh, and Mr. W. N. Westlake, of Exeter. To serve in their places the Committee have nominated Mr. John W. M'Lusky, of Glasgow, and Mr. John W. Whimster, of Bath.

During the year under review there have been two alterations in the list of those serving on the Committee as Hon. Secretaries of District Associations affiliated with the Institution. Mr. W. H. Mainwaring, of Lincoln, has succeeded Mr. F. M. Paternoster, of Felixstowe, as Hon. Secretary of the Eastern Counties Gas Managers' Association; and Mr. W. H. Bennett, of Redhill, has succeeded Mr. H. C. Head, of Winchester, as Hon. Secretary of the Southern Association of Gas Engineers and Managers.

Masonic.

The Installation Convocation of the Evening Star Chapter, No. 1719, was held last Wednesday, when the officers for the year 1920-21 were appointed and invested. The three Principals are: Ex. Comp. George Hands, William Belton, and A. C. Beal. The office of Scribe E. was filled by the reappointment of Comp. Rae P. Normand; while Ex. Comp. W. A. Surridge continues as Treasurer. Ex. Comps. W. Thomson and W. R. Silk are Director of Ceremonies and Scribe N. respectively. The three Sojourners are: Ex. Comps. Arthur Valon, F. C. Tilley, and H. W. Packham. The Stewards are: Comp. S. Freeman Burrows, Ex. Comp. C. Hulme, and Comp. E. Hazzard Harman.

Testing Spent Oxide.

In the "Journal für Gasbeleuchtung" for March 20, Dr. Kurt Schaefer, of Berlin, describes a new apparatus for testing the sulphur content of spent oxide. It is, says the author, of solid construction, and reduces the quantity of solution required by 50 p.ct. As will be seen from the diagram, the principle of the construction is that the sieve-like extracting jar is fixed by its upper edge to the central position of the apparatus, which is thus divided into two parts, connected by a bent glass tube. Thus the hot fumes of the solution are constantly playing round the extracting jar (and keeping it hot) before they are condensed and passed into the oxide from above. The apparatus can be fixed by means of the lower flask, which contains the solution. The condensing tube is purposely made narrow, to ensure contact with the cold water. When in use, the holes in the oxide container are stopped by a covering of asbestos wool. About 10 grammes of spent oxide are weighed into the dried apparatus. The operation lasts about two hours. The advantages of the arrangement are said to be that it combines flask and cooler, and is not easily breakable. It has been patented by a Berlin firm, and is supplied in glass or metal.

Tar for Spraying Roads.—Many complaints, it is said, have been made regarding tar supplied for spraying concrete roads, as "the tar churns up badly in the autumn." The "Municipal Engineer" recommends a safe specification, as follows: The tar shall be derived wholly from the carbonization of bituminous material. The specific gravity of the tar at 15° C. should be as nearly as possible 1·21; and in no case less than 1·18. This gravity shall be arrived at by straight distillation; and no oils or water gas may be added. To produce the required specific gravity, the free carbon shall not exceed 15 p.ct. of the weight of the tar.

Society of British Gas Industries.—Tuesday afternoon and Wednesday, June 15 and 16, are to be devoted to the annual general meeting in Sheffield of the Society of British Gas Industries. Members will meet in the Mappin Hall, St. George's Square, at 2.30 on the Tuesday, when, in addition to the formal business, the President (Sir Arthur Duckham, K.C.B.) will deliver an address on "Labour," to be followed by a discussion. The annual dinner that evening is to be at the Royal Victoria Hotel. On Wednesday there will be visits to two works—first to those of Messrs. Walker and Hall, Ltd., and afterwards to those of Messrs. Hadfields, Ltd., where there will be luncheon on the invitation of Sir Robert Hadfield, Bart.

Notes on Coal Analysis.—A bulletin on coal analysis, prepared originally for the information of the members of the Lancashire and Cheshire Coal Research Association by Mr. F. S. Sinnatt, M.B.E., M.Sc., F.I.C. (Director of Research to the Association), has now been issued in pamphlet form, at a price of 2s., for the benefit of others interested in the valuation of coal. Mr. R. A. Burrows (the President of the Association) remarks in a prefatory note that the time appears to be opportune for placing the purchase of coal upon a scientific foundation, which will not be possible until consumers, merchants, and collieries have agreed upon the methods of valuation most suited to the general conditions under which coal is consumed. The bulletin explains the determination of moisture and ash, the analysis of the ash, the determination of the fusibility of ash, of the carbonates in coal, of volatile matter and coke, of sulphur, of iron, of nitrogen, of chlorine, of carbon and hydrogen, and of oxygen. The tests which are not included under the chemical analysis of coal are not dealt with in the bulletin.

YORKSHIRE JUNIOR GAS ASSOCIATION.

The members of the Association paid a visit last Saturday to the Barugh Coke Oven and Chemical Plant, by the kind permission of the Old Silkstone Collieries, Ltd.

The party were motored from Barnsley to the works, where they were welcomed by Mr. L. C. Parkin and Mr. H. Townend, of the Collieries staff; Mr. J. H. Brooke, Manager of the coke oven plant; Mr. G. W. Chambers, Chemist; Mr. J. Thorp, Manager of the bye-product plant; and Mr. H. Ellison, Jun., of Messrs. Henry Ellison, Ltd., who had arranged for the visit to take place. These gentlemen, along with other members of the staff, took the visitors round the extensive works in small parties; and a very interesting time was afforded. A description of the plant appeared in the "JOURNAL" for Nov. 4, 1913 (p. 436), reference to which will give some idea of the works inspected.

In addition, Saturday's visitors were afforded the opportunity of seeing the adjacent power station of the Yorkshire Electric Power Company, who take about one-half of the gas produced on the coke-oven plant. Mr. Mitchell, the Resident Engineer, explained the method of steam-raising in gas-fired Stirling boilers, and conducted the party round the plant under his charge.

On returning to Barnsley, the visitors were hospitably entertained, and Major F. Middleton, on behalf of the Old Silkstone Collieries, Ltd., and the Old Silkstone Chemical Works, Ltd., expressed their pleasure in giving facilities for the visit.

The President of the Association (Mr. James M'Lusky), Mr. G. Dougill (Heckmondwike), and Mr. P. M'Nab (Low Moor), thanked the proprietors of the works for their kindness, and expressed the indebtedness of the visitors to the members of the staff who had devoted the Saturday afternoon to their benefit.

Mr. J. E. Brooke and Mr. J. Thorp responded; and this brought the proceedings to a close.

STOPPAGES IN GAS-SERVICES.

The "Journal für Gasbeleuchtung" of April 17 quoted an article on this subject by Dr. Dollinger in the "Journal of the Austro-Hungarian Gas Association."

In Vienna last year numerous stoppages in mains and services occurred, which at first were attributed to an increased sulphuretted hydrogen content of the gas. The latter was due to labour shortage, and the consequent impossibility of changing the purifying material as often as formerly. Analyses of the solid matter which caused the stoppages showed a sulphur content up to 2·5 p.ct.; but the matter was found to contain chiefly rust and prussian blue. The formation of the stoppages was, therefore, doubtless due in part to the cyanogen and the water vapour contained in the gas, as was confirmed by laboratory experiments. The water vapour in the gas causes rust in the pipes; and the iron hydroxide thus formed takes the cyanogen out of the gas, while the sulphuretted hydrogen has no effect.

The process can, therefore, really be attributed to the extraction of benzol from the gas, which was compulsory in Austria during the war. The gas, deprived of benzol at the works, takes up the fatty material deposited previously within the interior of the pipes, and so exposes them to the action of rust. In cases where benzol has still to be removed from the gas supplied, means must be found, says the author, to obviate this rusting.

Experiments with this end in view were made in Vienna; and it was resolved to find the relation existing between the benzol contained in coal gas and the fatty deposits in gas-mains. A mixture of equal parts of benzol-free gas and gas containing benzol was found to cause a considerable deposit of oily matter; but, when the benzol-free gas was in the proportion of two to one, the deposit was very slight, and scarcely noticeable. An experiment was made by saturating benzol-free gas with solvent naphtha before passing it into the mains. But quite apart from the high cost of such a process, it was found that no protective deposit was formed in the mains.

Empire Motor Fuels Committee.—There has been appointed by the Imperial Motor Transport Council an Empire Motor Fuels Committee (with Mr. E. S. Shrapnel Smith as Chairman), to take immediate steps to encourage and develop the production and utilization of additional motor fuel supplies and of raw materials therefor in all parts of the Empire, and more particularly to ensure increasing shipments of motor fuels to Great Britain and the Empire Overseas. Captain F. G. Bristow, F.C.I.S., will give his services as Secretary to the Committee; and communications may be addressed to him at No. 50, Pall Mall, London, S.W.

Flue Gas Analysis.—At the annual meeting of the Yorkshire Section of the Society of Chemical Industry, there was a lecture on "Graphical Methods of Interpreting Flue-Gas Analysis," by Mr. Gilbert B. Howarth, of the Coal Gas and Fuel Industries Department of Leeds University. Mr. Howarth referred to the complexity of the flue-gas calculations generally involved in efficiency tests of boilers and heating apparatus, and described the methods by which he had developed a series of diagrams to give quickly, from a simplified flue-gas analysis, accurate indications of the amount of surplus air admitted to the furnace and of the amount of heat wasted up the chimney with the flue gases.

GAS-OIL SITUATION IN AMERICA.

A statement upon the gas-oil situation has been issued by a Special Committee of the American Gas Association (with Mr. J. B. Klumpp as Chairman), who were appointed to investigate the matter. Conferences with representatives of gas interests of over a hundred cities and nearly 50 p.ct. of the water-gas manufacturers of the country, revealed the fact that a shortage of gas-oil is actually in existence because the gas companies are demanding a grade of oil from which it is possible to produce gasolene by modern refining processes.

In the five years from 1915 to 1919, the production of crude oil in the United States increased from 288 million to 378 million barrels, or approximately by 30 p.ct. Over the same period, the cost per barrel has increased 325 p.ct. During the past year, even with an unprecedented production of crude oil, the demand for gasolene and refined products exceeded the supply. The gas industry is confronted with the fundamental law of supply and demand; and there is every indication that, if they are to obtain high-grade gas-oil of the quality formerly used, it will be necessary to compete with gasolene and other refined products under the market conditions which this law of supply and demand will establish. Whether any greatly increased production of oil may be effected, is a matter for conjecture. The indications, however, are that the shortage in supply and the increase in price reflect an economic condition which may be of indefinite duration; and therefore any conservation in the use of oil in gas manufacture is of prime public importance. Recent experience of some of the larger companies shows that a much heavier oil than has been customary can be used in the ordinary water-gas process. By modifying gas-oil specifications, the available volume of oil for gas-making purposes will be increased at the expense of the fuel oil supply; and at the same time there will be released a corresponding volume of oil suitable for cracking into gasolene and other light-oil products. At the present time, the indications are that the use of heavier oils will tend to decrease somewhat the capacity of the gas-making machines; and in the existing gas manufacturing apparatus, the quantity of oil used per 1000 c.ft. of gas made will have to be reduced—resulting in a reduction in the heating value of the gas.

The Committee feel that prompt steps should be taken by gas companies (in which they will have the full support and assistance of the Association) to bring about the abolition of candle-power standards, wherever they may still exist—substituting a reasonable heating value standard.

Coal Dust and Fusain.

This is the title of a shilling bulletin issued by the Lancashire and Cheshire Coal Research Association, the authors being Messrs. F. S. Sinnatt, M.B.E., M.Sc., F.I.C. (Director of Research to the Association), H. Stern, B.Sc., A.I.C., and F. Bayley, M.Sc., A.I.C. Though the investigation detailed is incomplete, its publication in this form is in accordance with the feeling of members of the Association that, in view of the interest attached to the results, it is desirable to place them on record—especially as considerable time may be required for the completion of the work. It is not the intention of the Association to allow work to accumulate, and to publish it in lengthy reports or papers, but rather to place reliable information before the industry as quickly as possible in what is considered by them to be a convenient form. The chief object of the investigation was to determine the composition of the fusain (mother of coal, mineral charcoal, suddy parting, carbonized wood) associated with various Lancashire coals, and the amount present in the dust produced during the working of the coal at the colliery. The inquiry is being continued with the special object of determining the amount of fusain present in different coals, the properties of the fusain, with special reference to the temperature at which it will ignite, and the influence of the fusain upon the general properties of the coal or coal dust in which it occurs. Fusain occurs widely in Lancashire coals; but the amount present varies considerably. There appear to be at least two distinct forms. From the experiments, it would seem, the authors say, that, when a fire has been started in fusain, or in mixtures of fusain and coal dust, the cone of combustion rapidly traverses the mass; and consequently the presence of fusain in the dust may have a marked influence upon the tendency any particular seam has to produce gob fires, and for the zone of combustion to spread.

Benevolent Fund of the Institution of Mechanical Engineers.—The Committee of Management desire to direct attention to this fund, which is available for the financial assistance of those who are, or have been, members of the Institution of Mechanical Engineers, and of relatives or dependants of such persons. It is thought that possibly some who are qualified to receive assistance, and who are suffering financial hardship owing to the demobilization of the forces, the closing of the munitions factories, or other causes arising out of the war or otherwise, may not be aware of the existence of the fund. Forms of application for assistance may be obtained from the Hon. Secretary of the Benevolent Fund, Storey's Gate, Westminster, S.W. 1. Special arrangements are made to preserve the greatest possible secrecy in dealing with applications.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Oxide Purification.

Sir,—I am indebted to Dr. W. G. Anderson for his letter of criticism on my paper on "Oxide Purification." But I fail to see that the statements referred to are in any way misleading.

Dr. Anderson says that both sulphidation and oxidation may suffer equally from want of moisture! In what way? I have never previously heard of the oxidation of either ferrous or ferric sulphide being brought to a standstill for want of moisture. Exactly the opposite. It is true, however, that the higher sulphides, such as the disulphide, oxidize more freely in the presence of moisture; but the result is chiefly ferrous sulphate. Under the usual conditions of working, this is to be avoided.

Steam is admitted to the purifiers for two purposes—(1) to keep the fibre in the oxide swollen, and to reduce back-pressure due to cementation of the oxide by calcium sulphate, naphthalene, &c.; (2) to limit the temperatures, when necessary, by introducing water, in consequence of which the reactions slow down. Oxide when working efficiently, often contains less than 5 p.ct. of water. As much as 25 p.ct. to 30 p.ct. of water will render many oxides quite sodden.

For all but theoretical purposes, dry hydrogen sulphide and ferric oxide combine readily. For example, ferric oxide calcined at (say) 350° C., and hydrogen sulphide dried over calcium chloride, combine energetically. Such conditions, of course, are not met with in practice, as the gas supplies relatively large quantities of water. From a theoretical point of view, the necessity of a trace of water is an almost impossible one to prove, as ferric oxide is not completely dehydrated even at a temperature of 900° C., and the issue is then confused by traces of other substances.

Dr. Anderson confuses the "activity" of the material with the "efficiency" of the process. The activity I regard as the proportion of the ferric oxide to the total present which will form sulphide at any particular temperature. It is not concerned with the time taken for the absorption to be complete. On the other hand, the efficiency naturally varies with the rate of absorption, as well as the extent, and on other factors. The former will not be influenced by grinding; but the latter may be, although it is not "absolutely necessary to obtain good working results," as stated by Dr. Anderson recently. [See "Journal" March 23, p. 688.] In many cases it is useful to grind natural oxides to get rid of surplus water held in the pores of the material. A lump of such porous oxide with the pores filled with water is very impervious to gas; but a similar lump with the interstices filled with gas is, I would suggest, a better medium even than the finely-ground powder from the same lump.

The solubility, as Dr. Anderson points out, of hydrogen sulphide appears considerable when regarded from the point of volume; but it is not so impressive when weight is taken into consideration. If carbon dioxide and hydrogen were easily soluble, I would advocate their removal by a process of washing. I should also like to point out that the water in the oxide is at a temperature far above 20° C. if the purifiers are working efficiently.

G. Weyman.

Newcastle-on-Tyne, May 13, 1920.

Price of Gas in Germany.

Further increases in the price of gas were notified as follows in the "Frankfurter Zeitung" for the 11th inst.: The price of gas in the territory supplied by the Frankfurt Gas Company, and by the Municipal works at Heddernheim, will be increased to M. 1·20 per cb.m. (equivalent to 34s. per 1000 c.ft. at the pre-war rate of exchange) from the date on which meters are next read. The Municipal Information Bureau states that this increase was unavoidable, as the cost of production has again risen considerably, owing to the higher price of coal and the increased cost of wages and salaries. Other towns also have decided to raise the price of gas. For instance:

Breslau and Cologne	to 39s. 8d.
Leipzig	to 39s. 5d.
Schweinfurt	to 41s. 1d.
Bad Homburg & Saalfeld	to 36s. 10d.
Stettin	to 42s. 6d.

Gas-Workers Ballot.—The "Sheffield Daily Telegraph," writing on Friday last on the subject of restless workers, remarked that in many directions evidences are still to be found that general peace in the industrial world is as far off as ever. It was expected that the ballot of gas workers would have been made known on Tuesday next [to-day]; but an intimation was received yesterday that the date will be June 2. All returns are to be sent to the chief officer of each district; and no publication is to be made of the actual result until all the returns are in the hands of Mr. O'Grady, the Secretary of the National Federation of Gas Workers.

Chemical and Dyestuffs Traders' Association.—With a view to the more efficient organization of the chemical and dyestuffs industry on its distributing side, leading traders have decided to establish a British Chemical and Dyestuffs Traders' Association. Presiding at the meeting in Manchester at which this determination was arrived at, Mr. F. T. T. Reynolds said it would be the business of the Association to protect the interests of the merchant class, who played such an important part in the negotiations of the import and export trade, and to see that in departmental regulations the distributing side of the chemical and dyestuffs industry received proper recognition and fair play. Beyond this, the Association would be interested from time to time in national policy; and there was cause, even now, for the commercial interests of the country to protest against the undue share of the financial burden which was thrown upon the traders of the country.

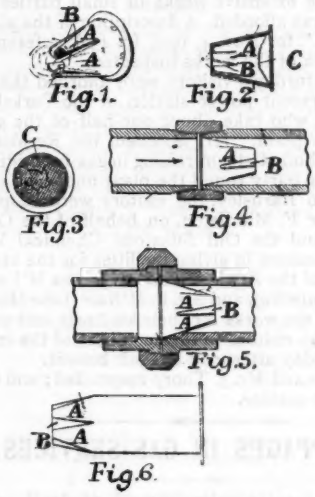
REGISTER OF PATENTS.

Gas-Mixing Devices.—No. 139,663.

Couch, C. A., of Toronto, Canada.

No. 9761; April 16, 1919.

This device is for use in connection with carburettors to ensure the intimate commingling of the air and gas before it reaches the place of combustion—for instance, a burner-nozzle or the cylinder of an engine. The device comprises a hollow cone frustum having a series of slots extending from the top towards the base, and forming a series of intermediate vanes, twisted along their length so as to impart a swirling or spiral movement to the mixture drawn in.



Couch's Gas-Mixing Devices.

Fig. 1 is a perspective view of the device (showing the conical side), comprising a series of curved members or vanes set tangentially to the axis. Fig. 2 is a modification with an enclosing casing, and showing a wire gauze for regulating the flow of gas. Fig. 3 is an end view of fig. 2, looking from the right toward the base of the device. Fig. 4 shows the mixing device inserted in a pipe—the insertion being made where an ordinary coupling is used to secure the ends of two pipe lengths together. Fig. 5 shows the device clamped in a pipe by a union construction, and fig. 6 is a modification of the device shown in fig. 1.

The gas flowing through the mixing device impinges against the inner surfaces of the vanes or members A during its egress through the slots B, and as the vanes are made with curved surfaces, and are arranged tangentially to the axis of the device, and converge towards its apex, the gas is discharged through the slots and apex of the device with a swirling or spiral movement, which results in a thorough mixing together of its various constituents—the movement being maintained in a greater or less degree during the remainder of its passage to the place of combustion.

To evenly distribute the gas as it flows through the device, wire gauze C may be secured to the base as in fig. 2, and the device may be enclosed in a casing or shell extending the entire length of the cone and in parallel relation to it. This outer casing is spaced at a slight distance from the mixing device, and, therefore, causes the volume of gas flowing through the apex and slots to be restricted and a vortex to be created which attains relatively great velocity during its swirling motion.

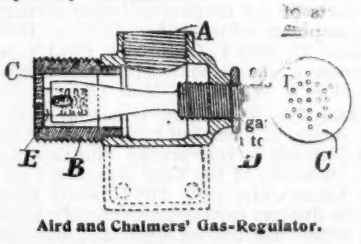
The conical formation of the device shown in fig. 1, or the conical end of the cylindrical mixing device as in fig. 6, provides for the discharge of a central current into the vortex through the peripheral currents created by the discharge of the gas through the slots in the vanes.

Gas-Regulator.—No. 141,291.

Aird, K., and Chalmers, R. B., of Falkirk.

No. 27,514; Nov. 7, 1919.

For effecting the closure of the apertures of a bunsen burner, according to this invention, there is provided an obturator having a spring-pressed secondary obturator head with a "lost-motion connection" with the primary obturator head.



Aird and Chalmers' Gas-Regulator.

The hollow regulator casing shown has a gas inlet branch A internally screw-threaded to receive the nipple B, of which the end wall C is pierced with series of fine apertures. For controlling them

there is provided an obturator D in screw-threaded engagement with the casing. At the opposite end or head, the obturator is bored to present a socket in which is received a secondary obturator head E having "a pin and slot connection with the obturator proper, and yieldingly protruded from the primary obturator head by a spring."

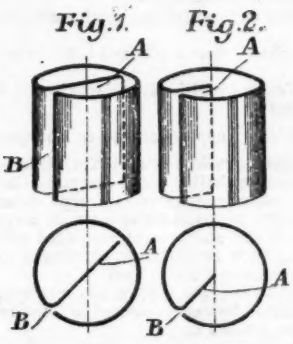
When the area for the passage of gas is to be reduced, first the obturator D is rotated in the direction to bring the secondary obturator head E into position to close certain of the apertures. On further rotation of the obturator, the primary obturator head is caused to close "concylic" apertures of one or more series spaced further from the centre of the nipple.

Rings for Filling Absorption Towers and Distillation Columns.—No. 139,880.

LESSING, R., of High Holborn, W.C.

No. 4967; Feb. 27, 1919.

Hollow cylinders, arranged with their axes vertical to form a filling for washing towers, distillation columns, &c., have been provided with radial partitions, the patentee says, for increasing the surface exposed to the gases or vapours. By his invention a "particularly advantageous form" for such rings is one where there is a more or less diametrical partition that, for purposes of construction, must be connected with one side of the ring which may be complete or nearly complete, but is not in such connection with the opposite side that gas and liquid cannot pass it, or is not at all connected with the opposite side. This form is said to be more efficient than a simple ring, since it offers a larger surface without materially increasing the obstruction to the passage of fluid.



Lessing's Filling for Absorption Towers, &c.

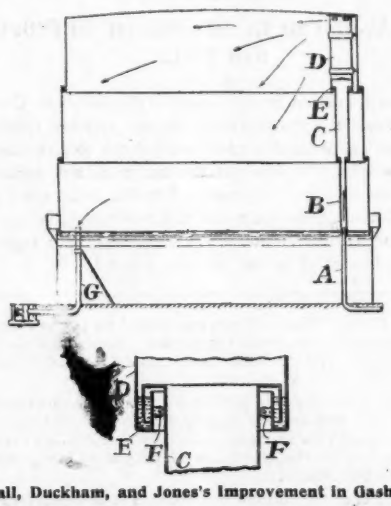
The illustration shows two metal rings in perspective view and plan. In fig. 1 the partition A is approximately co-extensive with a diametrical plane; while in fig. 2 it is considerably shorter. The rings are not closed rings—each having a gap B. This gap is advantageous as permitting the passage of fluid in a more or less radial direction through the wall of the ring.

Gasholders.—No. 141,647.

WOODALL, DUCKHAM, and JONES, LTD., and DUCKHAM, Sir A. M'D., of Strand, W.C.

No. 2112; Jan. 22, 1920.

Referring to their invention, the patentees remark: In the usual construction of gasholders, the pipe which delivers gas into the holder and the pipe which withdraws gas from the holder terminate at a level slightly above that of the water-seal within the holder. On this account, there is a tendency for the entering gas to pass to the withdrawal pipe direct, without intermixture with that already in the holder—causing



Woodall, Duckham, and Jones's Improvement in Gasholders.

the irregularities of the quality of the gas entering the holder being reproduced in the gas leaving the holder. By the present invention in a telescopic gasholder, ie which the gas is withdrawn from the lower part, the delivery pipe is constructed to telescope with the holder—the telescopic portions preferably being provided with water-seals as in the gasholder itself, so that the entering gas, or the greater portion of it, is delivered at the upper part of the holder.

A is the pipe through which gas enters. It ends a short distance above the water-seal, but is extended by telescopic lengths of pipes B, C, D, corresponding with the telescopic sections of the holder. The top length D is fixed to the top section of the holder, and is perforated or else a space is left at its upper part for the issue of gas. At its lower end, it is connected by a water-lute E with the length C; and the lower end of the latter is similarly connected with the length B, which is always below the surface of the water-seal of the holder.

When the lowest section of the holder descends into the water-seal, the length B telescopes over the pipe A; when the middle section descends, the length C telescopes over the length B; and when the top section descends, the length D telescopes over the length C. Lengths D and C may carry rollers F to facilitate the telescoping.

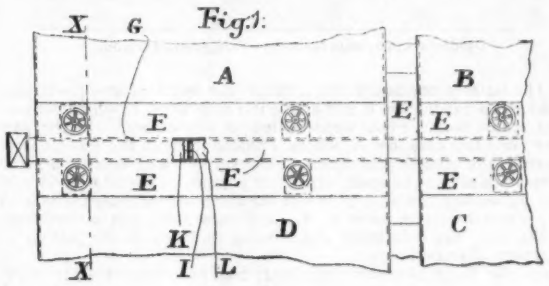
As indicated by the arrows, the entering gas has to descend through the existing gas to leave the holder by the pipe G, "so that intermixture of gases in the holder is aided."

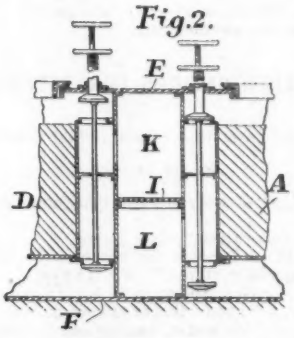
Purifiers for Gas-Works.—No. 141,572.

R. & J. DEMPSTER, LTD., and BEARD, G. F. H., of Manchester.

No. 16,363; June 30, 1919.

The invention has for its object not only to dispense with the usual conduits or pipe connections for the gas to the various boxes, but to adapt the chamber walls for valves according to patent No. 844 of 1915, so that they are integral parts with those of the conduits and purifier walls—the valves being within the boxes and in open communication with them, and yet being adjacent to the conduits.





Beard's (R. & J. Dempster) Gas-Purifier System.

Fig. 1 is a plan, and fig. 2 is a cross section (on a larger scale) through the line X, of a portion of the purifier system adapted to the invention, but in which various details necessary for complete operation are omitted for the sake of clearness. A portion of fig. 1 is broken open to show a part of a horizontal division plate I (as in fig. 2), which divides the conduit system into two passages K and L, and which part I (in fig. 1) has its vertical section turned somewhat into the horizontal plane for the purpose of illustration.

A shows in outline part of one box of the purifier set, and B, C, D, are other boxes. They are spaced apart so as to form, with the cover plates E and base plate F, an alley or passage, the sides of which are provided by the actual side plates of the purifier boxes. By means of the division plate I, the gas passage or conduit is divided into two at K, L, so that the gas, in circulating through the boxes and controlled by valves (shown and not shown), alternately passes along the passages in the manner of ordinary working, or according to the 1915 patent.

Revivifying Spent Oxide.—No. 141,172.

DIBDIN, W. J., of West Norwood, S.E.

No. 6523; March 15, 1919.

By this invention the spent oxide which has been heated in a current of superheated steam until the greater part of the sulphur has been volatilized, is heated in air or other oxidizing atmosphere at a comparatively moderate temperature—not above 600° C.—whereby it is oxidized and so made ready for re-use in the gas-purifier.

Fig. 1 is a vertical section through a vaporizing chamber A and an oxidizing chamber B. Fig. 2 is a section through A and through a condensing chamber C.

The walls of chambers A and B and extension D carry angle irons on which slide trays F having fine wire gauze bottoms; while (between the extensions) the trays are loaded with the spent oxide to a suitable depth. The sliding doors which close the chambers A and B are now opened and the trays pushed through the chamber B into the chamber

Fig.1.

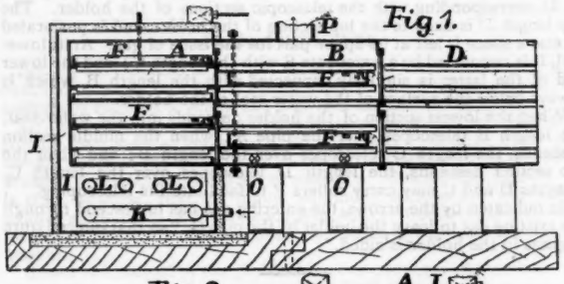
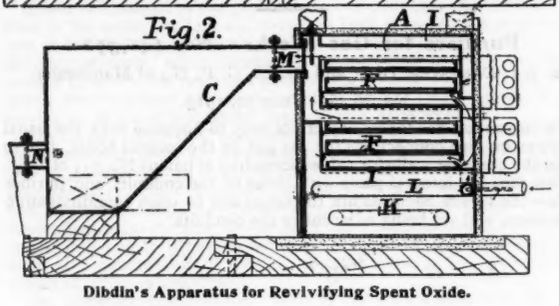


Fig.2.



Dibdin's Apparatus for Revivifying Spent Oxide.

A. The latter is contained in a furnace chamber I at the lower part of which is a gas-burner K and above it a steam-coil L, which delivers steam at low pressure (but superheated to above 500° C. by the gas-burner) into this chamber A, where it passes through the trays, carrying with it the greater proportion of the sulphur and volatile organic matter contained in the spent oxide. It escapes by the sliding door M to the condensing chamber C, where the sulphur condenses in the solid state; while the steam issues at N. It is passed through a condenser [not shown]; any permanent gases being returned to the bottom of the furnace chamber.

When the oxide has been sufficiently steamed, the trays are withdrawn into the chamber B. Here oxidation starts spontaneously and (the doors having been again closed) proceeds at a rate controlled by adjusting the air admission valves O; the natural draught up the flue P drawing the air into the chamber.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official List" for May 12.]

Nos. 12,151—12,847.

Ackroyd, J. H.—"Gas-burners and body coverings therefor." No. 12,239.

Bower, C.—"Gas-valves." No. 12,299.

Brégeat, J. H.—"Process for recovery of naphthalene and/or camphor from gaseous mixtures." No. 12,753.

Dobson, D. R.—"Gas-producers." No. 12,271.

Drew, H. D. K.—"Production of toluene derivatives." No. 12,470.

Fuessly, C. H.—"Method of treating and filtering water containing tarry matters." No. 12,650.

Gibb, D. M.—"Flue outlets for gas-fires, heating-stoves, &c." No. 12,183.

Hepworth, W.—See Fuessly. No. 12,650.

Hickinbottom, F.—See Gibb. No. 12,183.

Lambert, B.—"Recovery of condensable gases or vapours from carbon." No. 12,709.

Larner, C. W.—"Valves for regulating flow of liquids." No. 12,265.

Matheson, A.—"Manufacture of sulphuric acid." No. 12,630.

Metcalfe, R. C.—"Gas-producer conduits." No. 12,638.

Morgan, G. T.—See Drew. No. 12,470.

Parkinson Stove Company.—See Gibb. No. 12,183.

Perry, W. P.—"Apparatus for distilling and briquetting carbonaceous material." No. 12,802.

Pickard, W.—See Dobson. No. 12,271.

Schofield, L.—"Water-heaters, ovens, hot-closets, &c." No. 12,708.

Schroeder, F. W.—"Gas-burners." No. 12,642.

Shaw, H. S. Hele-.—"Pipe-joints." No. 12,230.

Somerville, J. M.—"Glass vessels containing wire to be heated to incandescence." No. 12,377.

South Metropolitan Gas Company.—See Somerville. No. 12,377.

Stott, V. H.—See Schofield. No. 12,708.

Sutton, F. C.—"Apparatus for effecting reactions between gases." No. 12,249.

Tribe, E.—See Shaw. No. 12,230.

Twynam, T.—"Gasification of fuel." No. 12,741.

Wilson, H. J.—"Method of treating and utilizing carbonaceous materials with recovery of hydrocarbon oils contained therein." No. 12,500.

Wilton, E. W.—See Fuessly. No. 12,650.

Wilton and Son, E. W.—See Fuessly. No. 12,650.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF LORDS.

Progress of Bills.

The South Metropolitan Gas Bill was reported from the Select Committee, with amendments.

The Examiners certified that the further Standing Orders applicable to the Uxbridge and Wycombe District Gas Bill had been complied with. The Bill was subsequently read a second time.

The Newtownards Urban District Council Bill was read the first time, passed, and sent to the Commons.

The Fertilizers (Temporary Control of Export) Bill was reported without amendment, read the third time, passed, and sent to the Commons.

The Ministry of Health Provisional Orders (No. 1) Bill was brought from the Commons, read the first time, and referred to the Examiners.

HOUSE OF COMMONS.

Progress of Bills.

It was agreed, in the case of the petition for the Uxbridge and Wycombe District Gas Bill, that the Standing Orders ought to be dispensed with, and the parties permitted to proceed with the Bill.

The Newtownards Urban District Council Bill was read the first time, and referred to the Examiners.

The Gas Provisional Orders Bill was read a second time, and committed.

The Masham Urban District Council Bill was reported, with amendments.

The Ministry of Health Provisional Orders (No. 1) Bill was read the third time, and passed.

Electricity Supply Companies Charges.

Captain Bower asked the Minister of Transport whether, in view of the fact that Edmundson's Electricity Statutory Charges Bill failed to become law, he would take immediate steps to arrange relief for certain electricity supply companies who were unable properly to make their companies pay under the present restricted scales of statutory charges, since, failing such relief, these companies would shortly be unable to fulfil their statutory obligations.

Sir E. Geddes replied that the subject was receiving his consideration, and the result would be communicated to Captain Bower as soon as a decision had been arrived at.

Motor Vehicles Using Benzol.

Sir Eric Geddes (the Minister of Transport) replying to a question addressed to him by Sir W. Joynson-Hicks, said there were no actual figures showing the proportion of motor vehicles now running on benzol; but on the best information available it was estimated that at least one-tenth used benzol, or benzol mixed with other non-dutiable fuels.

Home Production of Oil.

Mr. Kellaway, replying to a question by Viscount Curzon, addressed to the Secretary of State for the Home Department, said of the eleven oil-wells which had been drilled in Great Britain, one had been abandoned owing to the difficulty of shutting-off large quantities of water which were encountered. Traces of oil had been found in five wells; and one well, at Hardstoft, in Derbyshire, had produced oil in quantity. This well had a natural flow of 50 barrels per week. An experiment in baling showed that it would be possible to increase this quantity to 250 barrels per week. The total amount of oil produced to date was about 2800 barrels, or 100,000 gallons. The oil was being retained in storage pending a decision on the question of oil-rights in this country. Drilling was proceeding in nine other wells; and it was hoped that five would shortly be completed.

CLAUSES ADJUSTED IN THE SOUTH METROPOLITAN GAS BILL.

There was no discussion on the clauses in this Bill—the Chairman of the Committee and the Parliamentary Agents running through them alone. The only adjustments made were those to give effect to the Committee's decision. In this case, the interest on new ordinary stock will be at the rate of 6 p.ct., as provided in the Bill; the Committee having ordered that, on the old stock, the rate should be 5 p.ct. The clause asked for by the Automobile Associations, with regard to the compulsory production of benzol, was not granted.

The "Mr. Henry Wilson," who was stated on p. 330 of last week's "Journal" to have given evidence on the South Metropolitan Gas Bill, was Dr. Henry Wilson Hake, the Chief Gas Examiner to the Metropolitan Borough of Wandsworth.

For the purpose of further developing their gas-works the Lisburn Urban District Council are making application to the Local Government Board of Ireland for sanction to borrow £27,000. This sum will be partly expended on the purchase of property, land, machinery, &c., to deal with bye-products.

The Walsall Gas Committee have found it necessary to make a strong protest against the inferior quality of some of the coal received by them. In Glasgow, the unsatisfactory deliveries of coal are much complained of, and steps are being taken to bring to the notice of the Government the treatment meted-out to the Corporation.

SOUTH SUBURBAN GAS BILL.

Friday, May 7.

(*Before the* MARQUIS OF BRISTOL, *Chairman, Earl* CAITHNESS, *Lord* SALTERSFORD, *Earl* CHICHESTER, *and Lord* MASSEREENE.)

The consideration of this Bill followed immediately on that of the South Metropolitan Gas Company's Bill [reported last week]; and a decision on the two measures was given together. The Bill proposes to raise additional capital, and to alter the standard price, in addition to changing the method of charge to a calorific value basis. The sliding-scale remains unaltered.

Counsel for the Bill were Mr. VESEY KNOX, K.C., Mr. JEEVES, K.C., and Mr. JACQUES ABADY. The opponents were the London County Council represented by Mr. FREEMAN, K.C., and SIR H. COURTHOPE MUNRO, K.C. The South Eastern and other railway companies were represented by Mr. TALBOT, K.C., Sir LYNDEN MACASSEY, K.C., and Mr. SZLUMPER; the Chislehurst, Foots Cray, Dartford, and Bexley Urban District Councils, and the Bromley and Dartford Rural District Councils, by Mr. HARKER; the Bromley and Croydon Corporations, and the Beckenham, Penge, and Erith District Councils, by Mr. TALBOT, K.C., and Mr. HARKER; and the Camberwell Borough Council, by Mr. ST. JOHN RAIKES.

COUNSEL'S OPENING SPEECH.

Mr. VESEY KNOX, in opening the Bill, said the primary object of it was to authorize the use of certain additional lands as gas lands, and to increase the capital of the Company in order to enable it to erect new gas-works on the River Thames. The Bill also proposed to introduce the heat-unit basis and to alter the existing provisions as to the standard dividend. The Company was about as different a company from the South Metropolitan Company as two contiguous companies could well be, because the South Metropolitan Company was in a fully developed urban district, whereas the South Suburban Company had a very large and widely scattered district, of which a great part was still agricultural land. The capital of the Company was £1,087,000 of issued ordinary stock and £368,000 of debenture stock. Originally, the Company was formed in 1854 as the Crystal Palace Gas Company; and it was incorporated in 1858. At that time the area of supply comprised parts of three Metropolitan Boroughs—Lewisham, Lambeth, and Camberwell—and parts of Croydon, Penge, and Beckenham. This remained the area for fifty years. The capital was at first £100,000, but was increased to £530,000 by 1893. In that year the Company came to Parliament for powers to convert its capital, which was done; the capital then being £535,000 of 5 p.ct. stock with a standard price of 3s. 2d. and a neutral zone of 4d.—*i.e.*, there was a fall of dividend of 2s. 6d. p.ct. for every 1d. above 3s. 2d., and a rise of 2s. 6d. per 1d. below 2s. 10d. This practice was rather popular with gas companies at one time, as it was regarded as giving the shareholders a secured dividend during times of slight fluctuation. The penal effect of the sliding-scale only came into effect above 3s. 2d. When Sir George Livesey became Chairman of the Company, the name was changed, and a Bill introduced (in 1906) in which the candle power was reduced from 16 to 14; the standard price being at the same time reduced from 3s. 2d. to 2s. 9d., the neutral zone abolished, and the slide made 3s. 4d. instead of 2s. 6d. Had the turn events had taken through the war been foreseen at that time, such a change would never have been consented to. The first effect of the change, however, was a benefit to the shareholders, because the price fell to 2s. 3d., and the dividend rose to 6 p.ct., which was paid for the four half years before the war. The war had involved an increase of price to 5s. 2d.; and, but for the Temporary Increase of Charges Act, the dividend would have been the nominal one of 8s. 2d. p.ct. As, under the Act, they were allowed three-quarters of the standard rate, the actual amount was £3 15s. p.ct. Mr. Hunt succeeded the late Sir George Livesey as Chairman of the Company; and under his direction a number of other companies had been absorbed and amalgamated in the South Suburban Company. In 1912, the Bromley and Crays Companies were acquired, as well as the West Kent Company, which supplied in Erith, Crayford, and part of the Rural District of Dartford. In 1918, the Company acquired the Dartford Gas Company. The effect of these amalgamations was to bring the capital of the Company to over £1,000,000. The great object of the amalgamations was to get a site on the river; and in 1914 the Company promoted a Bill to acquire a tract of land at Belvedere, near Erith, upon which new gas-works were to be erected. The Royal Assent was given to the Bill in July, 1914; but, needless to say, the new works had never been erected. During the war, however, the supply of gas had increased enormously—the increase being from 2000 million c.ft. in 1913 to 2717 millions in 1919. There was a slight falling-off after the armistice; but this had been made up by general development. The Company were now suffering from a strain upon their works, in order to be able to supply, and, but for maintaining in use some of the antiquated works which had been acquired from the other companies (which it had been intended to shut-down), they could not have met the demands made upon them. There was, therefore, urgent necessity for erecting the works at Belvedere. At the end of 1919, the Company had £310,319 of ordinary stock unissued and £67,666 of loan capital unissued. The capital account had been overspent by £76,873; so that the balance available was £310,000. Under the present Bill, the Company asked for power to raise £500,000 of additional stock, with £166,000 borrowing powers—making the total capital powers £967,000. When the Bill was framed, it was anticipated that this amount would last for ten years; but, costs having risen very rapidly since, it was now thought that the amount would not carry the Company along for such a period, so that they would have to avail themselves of the powers of the Public Bill now before Parliament with regard to the raising of debentures. The estimate, on present prices, for the new works at Belvedere was £878,000, including an extension which it was believed would be required in five years. In addition, there were demands for new trunk-mains and distributing mains. Beyond this, there were the needs of a large number of housing schemes to be catered for; and it was estimated that the Company would have to spend the sum of £1,250,000 during the next ten years. There was no opposition to the Bill as far as land was concerned. The greater part of the Belvedere site had been acquired by agreement; and, for the remainder, compulsory powers were sought under the Bill. There was opposition by the local authorities to the capital clauses; but when the Committee had heard the evidence, he thought they would not regard the sum asked for as so startling as he admitted it appeared at first sight. In June, 1917, the dividend was £4 16s. 8d., as against 6 p.ct. before the war; but since 1917 everything seemed to have gone against the Company. The cost of coal had risen from 6·8d. per 1000 c.ft. of gas made in 1913 to 20·76d. in 1919; and at present rates it was about 24d. The corresponding figure in the case of the South Metropolitan Company was 13d. The explanation of this was that, whereas the South Suburban Company had made good contracts for coal from the Midlands, the Coal Controller had cancelled their contracts, and forced the Company to buy coal from Durham, which cost a great deal more. At the same time, as the Company's district was not a good one for selling coke, they did not get the same revenue from this source as some other companies. While the cost of coal had risen 130 p.ct., the revenue from residuals had risen by only 50 p.ct. At the same time, it would not be fair to say that the cost of coal to the Company at the present figure should be regarded as permanent, because it was hoped that the time would come when the Coal Controller would change his policy. The total working costs, including coal, had increased from 25d. in 1913 to 51·83d. in 1919. For the current year, the estimated cost was 61·38d. per 1000 c.ft., or within 1¼d. of the actual price being charged for gas. The result was that the consumers were getting their gas at a price which allowed of no return upon capital. Such a state of affairs could not continue for long; for the promised further increased cost of labour would wipe out the dividend altogether after the expiration of the Temporary Increase of Charges Act. The Company were working under a dual lighting and calorific value standard—viz., 14-candle power in part of the area, and 540 B.Th.U. as the calorific standard. As a matter of fact, the actual calorific value of the gas which was being supplied throughout the area was only 450 B.Th.U. This figure had been suggested by the Board of Trade as a desirable standard during the war, when the Company stripped the gas, as they were still doing. The local authorities had not prosecuted the Company, for the reason that the Board of Trade had asked that there should be no proceedings taken owing to the coal difficulty, and the fact that the Fuel Research Board was investigating the whole question. He agreed that the gas supplied had very little illuminating power from the point of view of the flat-flame burner. When the Company were again compelled to supply gas of the full statutory quality, the price would have to be increased from the present one of 5s. 2d. to nearly 7s. per 1000 c.ft. It was in these circumstances that the Company brought forward the Bill. It was proposed to adopt the report of the Fuel Research Board, and charge on the basis of the heat units supplied. The standard value was 450 B.Th.U.—viz., the value actually being supplied at the present moment, and to which quality of gas the consumers' fittings had all been adjusted. The basic price was 1s. 2d. per 100,000 B.Th.U.; but although this was a high figure compared with 11d. in the South Metropolitan Bill, it did not leave the Company much, if any, margin on the present cost of manufacture. On the other hand, it was not proposed to limit the present downward operation of the sliding-scale; but the standard dividend was to be 6 instead of 5 p.ct. The sliding-scale would operate exactly as it did now. It was calculated that, on the new basis, a further increase of about one-fifth of a penny in the cost of production would reduce the dividend by some 2 p.ct. This was an appreciable risk which was absent from the proposals of the South Metropolitan Company's Bill. The new price of 1s. 2d. was equivalent, with the present quality of gas, to 5s. 3d. per 1000 c.ft., or practically the current price; and at this price the shareholders would get the same dividend as they received before the war—*i.e.*, 6 p.ct. The slide was to be 2s. 4d. for every two-ninths of a penny per heat unit. This was equivalent to about 1d. per 1000 c.ft. with 450 B.Th.U. gas. At the same time, there were provisions to safeguard the consumer. It was enacted that the Company should not pay more than 6 p.ct. in any half year during the first 5½ years' operation of the Bill. It was also up to any local authority at any time after Jan. 1, 1926, and from time to time, to apply to the Board of Trade for a revision of the standard price—it being provided that, in any such consideration, the Board of Trade should take into account any increase or decrease in the cost of manufacture since the Act came into operation. The point was whether these provisions would enable the Company to raise the capital which was so badly needed. It did not seem to him that ordinary stock issued on these terms at the moment would be very popular; but the Chairman of the Company, Mr. Charles Hunt, believed it would be possible to raise a certain amount in this way. He (Mr. Vesey Knox) himself, however, thought that a large part of the capital would have to be raised as temporary redeemable preference stock. One circumstance which made this course less objectionable in the case of this Company than it might be in others was that at the moment there was no preference stock at all. Counsel then discussed the petitions against the Bill. One of the chief points raised by the local authorities was as to the alteration under the scheme in the standard price, which it was claimed was too high. The local authorities, however, would have to decide whether or not it was better in the interests of the consumer to have the check of the slide in the downward direction, or have a larger margin in the standard price. It seemed to him that one or other of these courses was inevitable in the financial interest of the Company. Another point raised by the local authorities outside London was with regard to the testing; and the

Company were willing to meet this point, by agreeing to the outside authorities coming under the jurisdiction of the Metropolitan Gas Referees.

Mr. Freeman understood that the outside authorities were willing that this should be done.

Mr. Vesey Knox thought it would make for smoother working in this respect if all the authorities were on the same basis than to have no fewer than twelve different people for the various authorities, as was the case now. The Company would be quite willing to modify the Bill in this respect.

Witnesses Called.

Mr. *Charles Hunt*, the Chairman of the Company, said that, while the Company were actually supplying the same quality of gas throughout their area, under statutory powers the supply of gas should be on a calorific basis in about three-quarters of the area, and on a candle-power basis in the remainder. It was now proposed, however, to abolish the illuminating power standard altogether, and to apply the 450 B.Th.U. standard to the whole of the area. He believed it would be found that the gas-fittings throughout the district were suitable; but any necessary alterations would be made at the expense of the Company. On the question of their ability to raise capital under the terms of the Bill, he had been fairly confident a few weeks ago; but things had since changed so much that he was afraid the position was rather more unfavourable to-day. Nevertheless, he thought it would be possible to raise sufficient money for their immediate needs under the Bill, at a small discount. The remainder would have to be raised by redeemable stock. There was very great need for the new works at Belvedere, because the carbonizing plant at the Sydenham, Bromley, and Dartford works was utilized last winter to the full extent to meet the demand. He thought that, by using water-borne coal, the price would be reduced several shillings per ton compared with the present price. The capital asked for in the Bill would, he thought, carry the Company along for from seven to ten years.

Replying to Mr. Freeman, witness said that the greater part of the fresh capital was required for the new works at Belvedere. Though admittedly the present was an extraordinarily expensive time to embark upon works of this nature (on account of the unstable conditions in regard to prices), the fact was that it was imperative for the Company to have new works if they were to carry out their obligations to their customers and satisfy the demand. The new works were required absolutely immediately. The last time the Company raised capital was twelve years ago, when the stock realized a premium of £20 per £100. The amount of £878,000 would have to be raised during the next three years, which was the estimated period which the new works would take to construct. The Company were hoping to get some relief under the Bill, which would enable the money required to be raised in that time.

Counsel expressed a doubt as to whether the Company would be able to raise the money even under the Bill; but witness thought it would be possible to do so.

The next point raised by counsel was as to whether the new rate of dividend should apply to the existing shareholders as well as to the new ones.

Witness pointed out that the old shareholders had suffered during the war through no fault of the Company. It was only fair, in his opinion, that they should be recompensed and put more on the old footing. Although the standard price would be increased under the Bill from 2s. 9d. to the equivalent of 5s. 3d.—a rise of 90 p.ct.—he reminded counsel that the cost of manufacture had increased by 120 p.ct. He further agreed that, on the basis of 500 B.Th.U. gas, the increase in price would be equivalent to 112 p.ct., but that this would not be out of proportion to the increase in manufacturing costs.

Mr. Harker put it to witness that the Bill was proposing to supply a very much inferior gas to that which the Company were bound to supply under their present Act.

Witness: You are getting it now.

Mr. Harker thought the Company would give a much inferior gas to that now being supplied if the Bill went through.

Witness said this would not be the case. The Company proposed to continue the present quality of 450 B.Th.U.; there was no present intention of altering it. In any case, the Company would have to declare an alteration and put the consumers' fittings in a condition to burn the altered gas. He agreed that it was hardly necessary to have the figure of 450 B.Th.U. mentioned in the Bill, because working on the recommendations of the Beilby report the Company would have to declare the quality proposed to be supplied. The present intention was to send out 450 B.Th.U. gas.

Counsel called attention to the fact that an application by the Company to the Board of Trade for an alteration of the illuminating standard (in those areas in which this existed) to the calorific standard was refused after being heard on its merits. Dartford preferred to continue to have a gas of 14-candle power standard. With regard to a revision of the standard price under the Bill, Counsel suggested that the Company should give an undertaking to come to Parliament with a Bill within five years, and so give the local authorities an opportunity of asking for a revision.

Witness said he preferred the Board of Trade, as it was a cheaper method of procedure.

The Chairman asked if witness thought it necessary that the existing shareholders should get the same rate of interest as the new ones, who would subscribe the additional capital now required.

Witness said it would be a very serious position for the existing shareholders, who had built-up the concern and who were "under water" now, if they were to be kept under water.

The Chairman: I do not suggest that they should be kept under water, but that they should receive a different rate of interest, whatever the rate may be.

Witness said the Company would probably have to raise the bulk of the new capital as redeemable preference stock at a higher rate of interest, which could be done under the Act of Parliament specially dealing with this matter. Ordinary stock could not be raised under the Bill at a higher rate than 6 p.ct. So far as ordinary stock was concerned, he thought it fair that it should all be on the same basis.

In answer to Mr. Vesey Knox in re-examination, Mr. Hunt said that so far as he could see at present the Company would continue to supply a 450 B.Th.U. gas until a new method of manufacture was devised, which made a lower calorific value more desirable.

Mr. *John Terrace*, the Chief Engineer of the Company, said that the Company were compelled to re-open the old Bromley works in 1917, in order to meet the great demand for gas from the munition works in the area; but in 1914 the whole manufacture had been carried out at the Sydenham works. The demand fell-off slightly after the signing of the armistice, but it had now increased. At the present rate of increase, the manufacturing plant at Sydenham and Bromley would be working at full capacity next year. It was considered absolutely necessary that the whole of the manufacturing plant should be concentrated in one works on the river-side in order to give the Company the advantage of water-borne coal. The new works should be commenced at once if they were to be completed by the time they would be required. He handed in the following estimate of the cost of a works for 3½ million c.ft. per day:

Manufacture.

Jetty and coal plant at Belvedere	£280,000
Manufacturing plant for 3½ million c.ft. per day	358,000
Extension of manufacturing plant	100,000
Bye-product works { Tar distilling	90,000
Bye-product works { Acid manufacture	50,000
	£878,000

Distribution.

12-in. main from Crayford to Dartford	£7,000
New mains in Dartford area, to improve supply	10,000
Mains and services for housing schemes contemplated	14,000
Normal extensions of mains and services during, say, ten years	160,000
Normal addition of meters and cookers in same period	160,000
	£351,000

The total expenditure contemplated, therefore, was £1,229,000. The plant provided-for was coal-gas plant of a capacity of 2½ million c.ft. per day, and water-gas plant with a capacity of 1 million. The main to connect Crayford and Dartford would have the effect of connecting-up the whole of the area served by the Company. At present, Dartford was not linked-up. No fewer than 5560 houses were contemplated in the Company's area, under different schemes, for some of which the Company had already received the lay-outs. The expenditure on mains was also partly due to the fact that larger mains were necessary to give effect to the recommendations of the Fuel Research Board. So far as the present supply of gas was concerned, he had every reason to believe that it was satisfactory. Stripping for benzol only applied to part of the gas at the Sydenham works; and the Company were stripping to the same extent now as during the war.

The Chairman: And you are going on with it?

Mr. *Hunt*: Yes, at the present time.

Mr. Freeman cross-examined on behalf of the London County Council.

Mr. *Terrace* said the new works would take two or three years to construct. When they were completed, the economy in production would, he calculated, be equivalent to practically 7 p.ct. on the capital outlay. In small houses, it was his experience that incandescent mantles were mostly used.

Mr. Freeman: That is different from the evidence we have had on the other Bill. Could you supply at less than 450 B.Th.U., and get a good illuminating power with an incandescent mantle?

Witness: Yes, down to something like 200 B.Th.U.; but I do not suggest that such a gas should be distributed.

But you could do it if you liked?—It brings other considerations into account.

What could you go down to with the flat-flame burner?—We do not expect to give a very effective light with a flat-flame burner with our present gas; it is only about 6-candle power.

And you have no complaints?—No.

Mr. Harker: Do you really suggest that you have not had innumerable complaints during the past few years?—I do. Witness added that there were other districts supplying 450 B.Th.U. gas, such as Tottenham and the Gas Light and Coke Company, the position being that the local authorities had been asked, because of the coal position, not to prosecute on account of statutory requirements not being met. The Board of Trade suggested that there should be no prosecution as long as a standard of 450 B.Th.U. was maintained. At the same time, it was found that the 450 B.Th.U. gas was very satisfactory. There were many thousands of flat-flame burners used in the Company's area; but they were only in positions where not much light was wanted. He did not agree that poor people used them in their living rooms.

The Chairman asked a number of questions on the matter of flat-flame burners.

Witness replied that for the most part they were placed in bedrooms and passages, but not in the rooms where the family sat. Incandescent mantles were almost invariably used for this purpose. In asking the authorities not to prosecute gas companies where a calorific standard of 450 B.Th.U. was maintained, the Board of Trade had not mentioned anything about illuminating power. To that extent the position of consumers using flat-flame burners who only got 6-candle power when they should get 14 candles had not been taken into account. So far as the Company were concerned, they were sending the 450 B.Th.U. gas into the districts where it was under an illuminating power standard of 14 candles.

The Chairman: And yet there have been no complaints as to the poor lighting value in flat-flame burners?

Witness: That is so.

Mr. *E. W. Drew*, Chartered Accountant, one of the Auditors of the Company, handed in tables giving the estimated revenue of the Company, and expenses for 1920 on the basis of present costs and prices, nothing being allowed in the figures for prospective increases in wages. The present rate of increase in the demand for gas was

3 p.ct.; and on this basis the output for 1920 would be 2800 millions. In order to earn the 6 p.ct. proposed in the Bill, it would be necessary to charge 1½d. per 1000 c.ft. more than the present price of 5s. 2d. The figure of 1s. 3d. in the Bill for the standard price had been based on the present cost of manufacture, whereas the cost in 1920 would be more, owing to the increase in wages which was anticipated. Labour cost £80,000 in 1913, but increased to £220,000 in 1919. In 1920 it would cost £253,000.

In reply to Mr. TALBOT, on the question of whether existing shareholders should have the same rate of interest as new shareholders, witness said that people who were buying gas shares now did so in the hope that something more would be allowed by Parliament.

Mr. TALBOT: The question is whether it is the function of Parliament to assist such an operation.

Monday, May 10.

At the commencement of the proceedings this morning,

Mr. VESEY KNOX, for the promoters, referred to a reply by Mr. Terrace, the Company's Chief Engineer, to the effect that the Company were stripping their gas as they were during the war. The exact position, said Counsel, was that 30 p.ct. of the gas made at the Lower Sydenham works was stripped; and as this gas was mixed in the holders with other gas not stripped, the net result was that the Company's gas was stripped to the extent of 30 p.ct. Continuing, Mr. Vesey Knox said that negotiations were going on with the railway companies; and he was glad to say that in principle they had arrived at an agreement. There were a few drafting points under discussion; but subject to these, it could be said they were agreed.

LONDON COUNTY COUNCIL OPPOSITION.

The opposition of the London County Council was then proceeded with.

Mr. *W. B. Keen*, accountant, said there were three or four points to which he desired to call attention. The London County Council had considered, as one matter, the fixing of the price at 1s. 2d., and the figure of 450 B.Th.U. as the calorific standard compared with the figure of 560 B.Th.U. mentioned in the South Metropolitan Bill. The proposal to continue to supply 450 B.Th.U. gas meant that the consumer would still get an inferior quality of gas for lighting purposes when using flat-flame burners, and he would pay a higher price, as the proposed price of 1s. 2d. on the heat-value basis was equivalent to 5s. 3d. per 1000 c.ft. On the other hand, if the calorific value was maintained at the present statutory quality of 540 B.Th.U., the equivalent price would be 6s. 3·6d. per 1000 c.ft. The Company's evidence was to the effect that the cost in 1919 was 4s. 3·83d., without dividend; and adding dividend at 6 p.ct. (as in 1913) would bring the total to 5s. 0·83d. for 1919. For 1920, the Company's estimate was 5s. 1·38d.; and adding the dividend at 6 p.ct. would bring this to 5s. 10·38d. Therefore, on the basis of 540 B.Th.U. gas, the standard price of 6s. 3d. was 5d. in excess of the estimated working expenses for 1920. In other words, 1s. 2d. would appear to be about 1d. too high as the standard price for gas of 540 B.Th.U. The supply of gas of 450 B.Th.U., which it was now proposed to stereotype by the Bill was a war-time measure; and the Council thought it would be desirable to have one standard throughout London; and that the same quality of gas should be supplied by the South Suburban Company as by the South Metropolitan Company.

The CHAIRMAN: There is also a lighting standard in one of this Company's districts. Does the question of uniformity include that?

Witness: I think the London County Council do not make a point of having a lighting standard. In London, the calorific value standard is to be universal; and the lighting standard only applies to certain portion of the South Suburban Company's area outside London.

Mr. *Keen* (continuing) said he saw no reason why the present standard dividend should be increased for the old capital, although there were reasons why a higher rate should be offered in respect of new capital. A great deal of the existing capital was converted stock, and gave an equivalent return of about 8 p.ct. to the investor, as compared with the conditions before conversion.

The CHAIRMAN asked how the return compared in regard to stock bought by the investor during the past five years. A comparison of 8 p.ct. with stock bought many years ago did not give much information, having regard to the present value of money.

Mr. *Keen* said he had not got this information.

In cross-examination by Mr. VESEY KNOX, witness agreed that, in order to carry out the recommendations of the Beilby report, with the general principles of which the London County Council agreed, it was not necessary to put any figure of calorific value in the Bill. Counsel said that putting in 450 B.Th.U. was only a declaration of what was intended, and it did not stereotype 450 B.Th.U.

On the question of the standard price, witness argued that it was the practice to take the present cost of manufacture, and allow a small margin for contingencies. This margin had never exceeded 3d.; but in this case it was 5d. He did not suggest that wages or coal would go down. But processes of manufacture should improve; and it had been given in evidence by the Engineer of the Company that an improvement in manufacturing costs could be looked-for when the new works were built. At the same time he was aware that there was a power of revision of the price every five years.

Mr. VESEY KNOX put it to witness that, according to Mr. Drew's evidence, the cost of manufacture in 1920 would be 5s. 1½d.—making a 450 B.Th.U. gas, and that if a 540 B.Th.U. gas was supplied, the cost must be proportionately higher. The extra cost of the higher calorific value gas would be about 1s.—making the total for 540 B.Th.U. gas 6s. 1½d. If to this was added a 2d. margin, this would bring the cost to about 6s. 3d., which witness had said would be the figure for the higher quality gas on the 1s. 2d. basis.

Witness said he did not accept the assumption that the higher quality gas would cost proportionately more.

Mr. VESEY KNOX remarked that some gas engineers said that it would be more than a proportionate increase. At any rate, putting the figures in this way, the total was the right one.

Mr. *Keen:* It is difficult for me to dispute it; I agree. Answering further questions, as to the wisdom of having a different standard of gas quality in the South Suburban Company's area while the manufacture of it had to be carried out at the inland works and not at a new works on the river, and that the whole policy of the Beilby report was not to have uniformity, but to leave gas undertakings to declare the quality which they would supply, witness said that was a matter for engineers.

The CHAIRMAN asked if a 450 B.Th.U. gas, unstripped, would give a better light.

Mr. VESEY KNOX said that it would give about 7 or 8 candle power in the ordinary flat-flame burner; but if measured by the burner which was used for the official test, it would give 11 or 12 candle power. This was gas stripped to the extent of one-third, as in the case of this Company.

Mr. *James Ollis*, the Chief of the Public Control Department of the London County Council, said that tests had been made of the gas of the three large Metropolitan companies, under the present 450 B.Th.U. standard; but the examiners had been unable to get any result as to candle power. It was evident that a 450 B.Th.U. gas, stripped to the extent of 30 p.ct., gave a very low illuminating value for the purpose of flat-flame burners. The tests had left the examiner unable to say what the flame value was. Therefore, the Council thought it better that the gas should approximate to a standard of 540 B.Th.U. than 450 B.Th.U. The latter should not be taken as a permanent figure, because it was only agreed upon as a war measure. After the war, some local authorities appealed to the Board of Trade to get the Order made during the war with regard to calorific value rescinded; but the companies pointed out that they were still labouring under difficulties with reference to coal supplies, and that it would be unfair for the Order to be rescinded at the present moment. Witness called the attention of the Committee to the report of the Fuel Research Board, in which reference was made to a case where the calorific value had been proved to have been worked up to the right figure at about the time the official test was expected to be made, and to have been reduced immediately afterwards. He did not suggest that this was being done in London; but it had happened, and it showed what could be done where there was anything like a long notice of the official test. For this reason, he suggested that the South Suburban Company should come under the same test throughout the portion of its area within the County of London as did the three large London companies—viz., the test to be by the Metropolitan Gas Referees.

Mr. VESEY KNOX, in his cross examination, recalled the fact that the Bill carried out the recommendations of the Fuel Research Board, as modified by the subsequent conference of consumers, the local authorities, and the Fuel Board; and that the Public Control Committee of the London County Council had reported in favour of these recommendations.

Witness agreed; but he raised the question as to the desirability of having a uniform standard of value throughout the County of London, instead of several different values. The London County Council had in mind, he said, the fact that the Fuel Board suggested that different centres of population, with their different needs, should have special qualities of gas; and London was regarded as a centre in which the needs were approximately the same throughout, and therefore should have the same quality of gas. The present Bill did not help in this direction.

Mr. VESEY KNOX agreed that the three large London companies were in the same position; but the South Suburban Company were in a different position, in that they had not yet built their works on the river, where they could get the advantage of water-borne coal.

Witness replied that he had been assured that the make of gas depended very little upon these conditions, and calculations had been made which showed that the South Suburban Company could make a gas under present conditions with as small a percentage of inerts in it as did the South Metropolitan Company.

Mr. VESEY KNOX: Your object is to level-up all the companies to that of the South Metropolitan Company?

Witness: I do not say that; but the Council are anxious that the whole situation should be controlled by what is the economic consideration in the manufacture of gas.

But is it not desirable, in giving the South Suburban Company a new system of charge to have as little change as possible from the present conditions? We are at present supplying 450 B.Th.U. gas, to which the burners are adapted.—If I were a resident in your area I should not take that view of it. I should desire to have a proper gas. Your present penalty standard is 475 B.Th.U.; but under the Bill it would be 450. Witness added to his reply by stating that the London County Council had sent into the district several times to make tests, but had never been able to carry out regular tests; and he doubted whether anybody except the Company's officers knew what gas was being supplied. Moreover, he questioned whether all the consumers' fittings had been altered to burn the quality of gas now being supplied. He did not agree with Counsel that the maximum of 540 B.Th.U. now imposed upon the Company was a counsel of perfection; and he presumed that Parliament expected companies to carry out their obligations in an honourable manner. For this reason, he disagreed with the view that the real standard was 475 B.Th.U.—the penalty standard.

After some further questions,

Mr. VESEY KNOX said that the promoters would agree to the testing being carried out under the Metropolitan Gas Referees, if the Borough Councils who were now supposed to test did not disagree.

The CHAIRMAN: If this Bill goes through the lighting standard will be abolished, and there will be no penalty if the illuminating value goes down.

Witness: Yes; I think that is right, because the bulk of gas is now used for its heating value. At the same time, for some industrial purposes, and also for domestic use in flat-flame burners, it is desirable that the gas should have an illuminating value, although there should not be a penalty.

The CHAIRMAN: But you would have no hold on the Company if the light was bad and there was no penalty?—As far as London is concerned, we are prepared to let the lighting test go. But if all the

companies supplied a gas of the same quality as the South Metropolitan Company, it would have a good illuminating value.

But if the gas is stripped, we are told perfectly plainly that it would have no illuminating value, although it would have heating value. There is nothing in the Bill to prevent the gas being stripped; and we know that it is being stripped to the extent of 30 p.ct. now?—I was surprised to hear that, because my information is that all companies have given up washing their gas because, from the point of view of gas-works operations, it is not a paying proposition.

But I want to know the London County Council's view with regard to this Bill. Is it that the lighting test should be abolished, and the gas put entirely on a heating basis?—The gas companies in the past have protested against being under a dual standard; and the London County Council have rather assented to this view.

Witness added that, so far as the lighting value was concerned, the County Council were prepared to rely on the commercial instinct of the Company to supply something which would suit consumers who used flat-flame burners. At the present moment there were three local authorities in the London portion of the Company's area who had the power to test. Lewisham, however, was the only one which took the trouble to test; and his information was that Lewisham would not object to the tests being made by the London County Council.

Mr. Freeman said there were resolutions from Lewisham and Lambeth assenting to this proposal.

Mr. St. John Raikes said that Camberwell also assented.

Mr. Freeman's Closing Speech.

Mr. Freeman, addressing the Committee for the London County Council, said that although the Beilby report suggested that gas companies should be allowed to declare the calorific value of the gas which they intended to supply, he hoped the Committee would not allow varying standards for the different companies. The London County Council held the view that the standard proposed by the South Metropolitan Company should be adopted, rather than the lower one proposed by the South Suburban Company. There was no special reason why the lower standard should be accepted, beyond the fact that the Board of Trade had sanctioned it during the war owing to the requirements of the nation in the matter of explosives, and later on account of the difficulties with coal. There had been no need for the Company to put the figure of 450 B.Th.U. in the Bill at all, because it was intended, acting under the Beilby report, to declare any other value in the future. The 450 B.Th.U. being in the Bill was evidently a declaration of what the Company intended to do now. This figure he contended was too low, and had only been agreed to by the Board of Trade as a war measure. He asked the Committee to impose a figure which approximated to the calorific power of the gas which the South Metropolitan Company intended to supply. On the question of capital, everybody was agreed that, in order to induce people to subscribe new capital, it would be necessary to offer a higher rate of dividend than that which the ordinary stock was now receiving. The London County Council, however, saw no justification for giving 6 p.ct. on the existing capital, because, the sliding-scale being preserved in the Bill, with due care and management on the part of the Company, there was the prospect of a higher rate than the present standard of 5 p.ct.

The Outside Councils' Case.

Mr. J. G. Talbot then addressed the Committee—the districts he represented being the Bromley and Croydon Corporations and the Beckenham, Erith, and Penge Urban District Councils. He said he had no objection to the main scheme of the Bill, although some of its provisions were rather obscure as far as the shareholders were concerned. So far as he could see, the Bill did nothing for the consumer; and it was impossible for the promoters to say that the consumers should bear the whole of the loss arising out of war conditions. The standard price proposed was 3d. above that of the South Metropolitan Bill, and nearly double the present standard price of the South Suburban Company, whereas the South Suburban's standard price was 4d. below the South Metropolitan's existing standard. Though there might possibly be a case for the change proposed, there were some facts concerning it to which the attention of the Committee should be drawn. To justify the proposals of the Bill, an estimate of the costs and revenue during 1920 had been put in by Mr. Drew, in which was included the sum of £11,000 for the Special Purposes Fund. This was a fund to which the Company were authorized to place money when they had it; but they were not required by Act of Parliament to do so. He suggested that this was not a time to begin contributions to the fund. The cost of coal in 1919 was put at £420,333; and for 1920 the estimate was £519,635, the basis of the calculation being an increase from 37·12d. to 44·54d. per 1000 c.ft. In this connection, however, it should be borne in mind that Mr. Vesey Knox, in opening the Bill, pointed out that the conditions with regard to coal were exceptional, in that contracts for cheap Midland coal had been cancelled by the Coal Controller and dear coal from Durham substituted. The Company in its estimate had taken the coal return for 1919 as a basis, which in the circumstances was an extreme figure. It was quite true, as Mr. Vesey Knox had said, that there was a prospect of an increase in labour costs; but the position was that there were possibilities of increases and possibilities of decreases. He therefore suggested that the Company's estimate for 1920 should be subject to a reasonable discount for the reasons he had put forward. The South Suburban Company's costs had always been higher than those of the South Metropolitan Company. There was a difference of 2·37d. per 1000 c.ft. or ¼d. per heat unit, which would justify an increase of a fraction over the 11d., the price under the new system in the South Metropolitan Bill. There was not such a difference, however, as would justify the 1s. 2d. proposed in the South Suburban Bill. It had been argued that the Temporary Increase of Charges Act would shortly come to an end, when the Company would be in an even worse position; but nothing was more certain than that Parliament would renew the Act or deal with the position in some way. He therefore asked the Committee not to decide the Bill on the assumption that the Temporary Increase of Charges Act would come to an end when its present period expired. He strongly supported the arguments put forward by the London County Council, and asked that the standard price should be 11½d. and not 1s. 2d.

Mr. *W. R. Herring* (Consulting Gas Engineer) was then called, and criticized some of the details of Mr. Drew's estimated working costs for 1920. As to coal, the figures given represented an increase of 23 p.ct. over 1919; but he had not heard in the Company's evidence any explanation of this enormous increase. The wages of the carbonizing staff had been increased by 300 p.ct. over the 1914 figures; but that was not a generally accepted increase for this class of wages. There was a very large increase in the cost of gas stoves—viz., from 2·72d. in 1919 to 3·39d. per 1000 c.ft. in 1920. If these figures were accurate, the Company should refrain from supplying so many of these appliances. He certainly did not think the Company ought to make the large allowance provided for the Special Purposes Fund. On the other side of the account, the revenue from residual products had been based on rather a low scale. Coke would fetch more than was allowed, as would also ammonia and tar. In his opinion the amounts which had been taken did not accurately represent what would probably happen during the next year. On the whole, it seemed that every possible increase in the expenses had been taken, with a very conservative revenue from bye-products. He agreed with the view already expressed, that there was no reason for an increase of the existing standard dividend on the old capital; but it was immaterial what the rate of interest on new capital was, because it would have to be raised under the auction clauses. The figure of 1s. 2d. per unit under the new basis of charge was high. He did not think that during the period of five years, before which there could be no revision, the costs would necessitate such a high figure.

Mr. Vesey Knox, cross-examining, first made the point that Mr. Herring's suggestion—that the cost of coal had increased by 23 p.ct. compared with 1919—overlooked the fact that there was a larger make of gas. There was a 3 p.ct. increase in output which would bring the increase down to 20 p.ct. This, Counsel suggested, with the increase in coal which was now being threatened, was not an excessive amount. Moreover, there was a certainty that labour would rise; and it was more than probable that the one would offset the other so far as the final figures for the year went, because the 1919 figures for labour had been taken.

Witness agreed that he had overlooked the larger make of gas in giving his figure of 23 p.ct., but would not agree that the increase in labour would more than offset the increase in coal. On the question of wages for carbonizing, he said the generally accepted increase over 1914 was from 130 to 140 p.ct. This was the figure taken in Edinburgh, upon which the price of gas had been fixed for the coming year. They had a system of retorts similar to that of the South Suburban Company; and he was very surprised to hear it suggested by Counsel that the increase was 300 p.ct.

Mr. Vesey Knox said that the figures put in by Mr. Drew were actually based on the first three months' working this year.

Witness replied that the costs in the summer months might easily be different from those in the winter.

Mr. Vesey Knox said that the estimated actual working expenses for 1920, less residuals, were 61·38d. per 1000 c.ft. The remuneration on capital on the pre-war basis was 2·07d., and the charges on loan capital 5·59d., making a total of 7od. or 5s. 10d. per 1000 c.ft. On the pre-war basis, a figure of 2s. 3d. covered the same items; so that the increase over pre-war conditions was 3s. 7d. The Company asked in the Bill for an increase in the standard price equivalent to 2s. 6d. per 1000 c.ft. The change in respect of dividend would mean another 6d., or 3s. in all. Thus the Company would be 7d. per 1000 c.ft. worse off than before the war. The Company were getting less alteration in the financial return than the increase in the cost of manufacture.

Witness disputed this method of stating the position, and said it was not fair to mix up the cost of manufacture and the future dividend.

In re-examination by Mr. Talbot, witness stated that tar was fetching £5 per ton in his own case. In his opinion sulphate of ammonia would fetch very much more than was allowed by Mr. Drew, and the price of coke would move with that of coal.

Another Speech in Opposition.

Mr. R. Harker (for outside local authorities) asked the Committee not to dispense with the existing illuminating power test, whatever might be their decision with regard to the rest of the area. The Bill would enable the promoters to supply a gas in future which would not illuminate. In 1916 the Company asked the Board of Trade for an Order to supply, in the areas which he represented, gas of a calorific value of 475 B.Th.U., without any illuminating power test. This application was refused. Again, in 1918, the Company came before Parliament with a Bill in which there was a clause abolishing the illuminating power test. But, the authorities objecting, the clause was withdrawn. There had been many attempts on the part of the Company to deprive the authorities of their right to have gas which would illuminate; but up to now all attempts had failed. He complained of the recital in the preamble of the Bill which stated that the Company were supplying 450 B.Th.U. gas with the consent of the Board of Trade. Not a word was said there that the present calorific value was agreed to as a temporary measure owing to war conditions. The only reason given to him why they should have this poor quality gas in the future was that they were getting it now.

Mr. St. John Raikes urged that the present was an inconvenient time for Private Bill Legislation on this matter. He asked that the whole question should be postponed until the Board of Trade brought in their promised Bill.

This completed the opposition to the Bill.

Mr. Vesey Knox's Final Reply.

Mr. Vesey Knox, replying on the whole case, said that with the exception of Mr. Raikes everybody seemed to be agreed that steps should be taken to restore the shareholders to something like their pre-war position. It might be that the scheme of the Bill was not so good as that of the South Metropolitan Company; but yet it might be a good enough scheme for the Committee to approve as an improvement upon the present system. If he could show that it was a fair and workable scheme, then he thought the Committee would be willing to

approve it. The alteration of standard price and the figure fixed for the standard dividend were rarely inseparable; and he submitted that the proposals of the Bill in both respects were fair having regard to the estimate for 1920, which was as accurate as could be arrived at under present physical conditions. Then it had been stated that by inserting 450 B.Th.U. in the Bill, this quality of gas was being stereotyped for all time. This, however, was precisely what the Bill did not do, and what the Beilby report did not want done. It was not fair to argue that under the new conditions a company would strip its gas to such an extent that it would have no luminosity at all. A company would hardly be likely to do this, if there were any considerable number of flat-flame burners in the area—it would be contrary to their own commercial interests. He therefore asked the Committee to leave this to the ordinary commercial instinct of the Company to deal with. For the Company to do as was suggested would simply be to drive their consumers to use electricity, and generally to cause universal dissatisfaction.

THE COMMITTEE'S DECISION ON THE TWO BILLS.

The room was then cleared; and (as stated in our last issue) the Committee deliberated for three-quarters of an hour before giving their decision.

This decision, as already reported, was to pass both Bills. In the case of the South Metropolitan Bill a power of revision of price every five years was inserted, the dividend on the old stock is to be 5 p ct., and the promoters were asked to bring forward any special proposals they might have for dealing with new capital. In the case of the South Suburban Bill, the standard price was fixed at 5s. 2d. per 1000 c.ft. (or its equivalent per heat unit), 5 p.ct. was the dividend allowed on the old stock, with the same provision as to new capital as in the South Metropolitan case, and the calorific value of the gas was fixed at 475 B.Th.U.

Clauses Settled in the South Suburban Bill.

Tuesday, May 11.

Mr. JEEVES, K.C., for the Company, placed before the Committee the alterations in clauses necessary to carry out the Committee's decision. On only a few was there any discussion. The calorific value test is now to be applied to the whole of the Company's area; and the figure of 475 B.Th.U. is substituted for 450 B.Th.U.

Mr. TALBOT, for the local authorities, said he was not certain from the Committee's decision whether 475 B.Th.U. was intended to be the penalty standard. As things were at present, the penalty was dependent upon the average of three tests.

The CHAIRMAN said the whole of the existing conditions would remain in force, except that 475 B.Th.U., took the place of 450 B.Th.U. The penalty figure was 475 B.Th.U.; but the same number of tests would be made as now for the purpose of enforcing the penalty.

At the request of the railway companies provision was made that notice of any alteration in the calorific standard should be published in the "London Gazette."

Some discussion took place with regard to the wording of the clause providing that the Company should adjust all burners to consume the particular quality of gas being supplied for the time being.

The promoters brought forward a clause providing for the alteration of any burners on the request of the consumer, free of charge. The Company also offered to extend the provision to service-pipes. The point made by Mr. Jeeves on this clause was that the Company ought not to be compelled to do this except at the request of the consumer. This was the condition placed upon the Gas Light and Coke Company, but the argument put before the Committee was that in many cases the fittings would not have to be altered, and it would be unfair to place on the Company the task of going to all consumers' houses and seeing if the fittings required to be adjusted. The Company offered to do everything that was asked of them with regard to burners and service-pipes, when their attention was called to the matter.

Mr. TALBOT said there was no controversy that the Company was to alter burners and service-pipes.

Mr. JEEVES: Service-pipes and burners; not other fittings.

Mr. TALBOT said he understood from Mr. Hunt's evidence that all burners on all appliances would be adjusted free of charge; and that was what he asked for. The second point was that as the clause was drawn, it was put upon any consumer to say that he wanted his fittings adjusted. This was all very well if it was a firm who had a scientific man to advise them; but in the case of a small consumer, such a clause would become a dead-letter. He wanted it put upon the Company within (say) six months—which it was agreed must elapse between the issue of the notice and the giving of the actual supply of a different calorific value—to adjust all burners and service-pipes for the purpose of consuming the different quality of gas. Again, under the clause as drafted, there were no means of enforcing the clanse; and he asked that a penalty should be inserted for default after the notice had expired—such penalty to be recoverable by the local authority. He had not the least doubt the Company intended to do all they had promised; but the clause was perfectly useless unless there was a penalty.

The CHAIRMAN: Has such a penalty clause been inserted in any other Bill?

Mr. TALBOT said there had not been a similar proposal made before; and, so far as he knew, the question had never before been raised.

Mr. JEEVES said the Company were willing to put a notice on the demand-note telling the consumer he was entitled to have his fittings adjusted free of charge.

Mr. TALBOT said that only told the consumer his rights, and did not help him to enforce them. Moreover, it was known how little attention was paid to these notices on demand notes, which were usually in microscopic type. Further, the majority of consumers in the Company's district would never receive any demand notes, as they took gas through prepayment meters. He therefore asked that the Company should make all necessary adjustments free of charge; and that if this was not done within six months of giving notice of the change in quality, a penalty of £50 per day should be recoverable by the local authority, which could take the necessary proceedings.

Mr. VESEY KNOX said there was no precedent for the proposal in the Bill, which was novel in this respect so far as changing the quality of the gas was concerned. But there were cases in which changes in the standard quality of the gas had been authorized by Parliament; and in these cases the companies had been compelled to supply suitable burners. In the case of the Gas Light and Coke Company, when the change was made from an illuminating to a calorific power standard, the Company were put under an obligation (within two years of the passing of the Act) to supply suitable burners, if required to do so by a consumer. The clause now brought up by the promoters in this case followed on the lines of the Gas Light and Coke Company's Act. The point raised by Mr. Talbot—that this change should be made within the period of the six months—he thought was impracticable. When notice was given, time would have to be allowed for representations to be made by the local authority; and part of the six months would be taken up with possible conferences with the local authority. It would not, moreover, be desirable to commence adjusting the burners too soon before the date of beginning the new supply, because if they did a number of consumers would have burners adjusted to a gas that the Company were not in a position to supply. There must be some inconvenience in a matter of this kind; and he suggested that the change should be made within six months after the new supply was commenced, and not within six months of giving the notice.

Mr. TALBOT said he would accept this proposal.

Mr. VESEY KNOX, dealing with the question of the adjustment of burners, said the Company were following the agreement come to between the gas authorities, the Fuel Research Board, and the London County Council. There was a point here which might affect other companies, although it did not so much affect the South Suburban Company. The rather wider words proposed by Mr. Talbot would seriously affect companies in whose areas there were expensive furnaces and other elaborate works for the industrial use of gas; and if the change was to be made applicable to this apparatus, it would be a very serious thing. The matter had been discussed at the conference to which he had referred, and the words agreed were: "The adjustment of the burners in the appliances theretofore used by such consumer . . .;" and the South Suburban Company thought it would be well to stick to this wording, rather in the interests of others than of themselves.

Mr. TALBOT said that if there were no appliances in the Company's area which came under the heading of those mentioned by Mr. Vesey Knox, he saw no reason for the question being raised on this Bill.

Mr. VESEY KNOX said he was anxious to adhere to the agreement come to with the Fuel Research Board. With regard to the penalty, he hoped the Committee would not put one upon the Company, because he really did not see how it could be enforced; and in any case the Company were not likely to do anything which would cause dissatisfaction among the consumers.

The CHAIRMAN said the Committee would not agree to a penalty.

Mr. VESEY KNOX, speaking with regard to the change of burners, said that changes of this character were always carried out on the requirement of the consumer; and he did not see how it could be done otherwise.

The CHAIRMAN said the Committee were of opinion that the Company should make good the burners in all appliances with, necessarily, the consent of the consumer. If the consumer did not give his consent, then the Company would be absolved from the compulsion to change the burners in these cases.

The clause was therefore made to read: "The Company shall, unless the consumer refuses, make such adjustments," &c.

The only other amendment mentioned was one allowing the payment of 7 p.ct. dividend on all new capital; and to this the local authorities assented.

The Bill was then ordered to be reported to the House for third reading.

MASHAM URBAN DISTRICT COUNCIL BILL.

This Bill came before the Unopposed Bills Committee of the House of Commons on Thursday last—Sir E. CORNWALL (Deputy Chairman of Ways and Means) in the chair.

Mr. BAKER (Parliamentary Agent) said the Bill authorized the transfer to the Masham Urban District Council of the gas and electricity undertakings now owned by the Company. In February, 1919, the Gas Company intimated to the Council that they were unable to carry on their undertaking, as a serious loss was being made. The Council therefore were faced with the question of either taking-over the undertaking or leaving the district without gas. A public meeting was held, and it was decided to purchase both the gas and electricity undertakings for a sum of between £600 and £800. Last session the Council endeavoured to introduce a late Bill to authorize the transfer; but permission to introduce it was refused, and the matter had to stand over until this session.

The CHAIRMAN said that the Ministry of Transport had reported that it was undesirable to create a precedent for the transfer of the electricity powers except through the Electricity Commissioners. The promoters would have to satisfy the Committee that this was a very special case which should be dealt with in this way, instead of through the Electricity Commissioners. The Committee had been told that the undertakings were not paying their way; and it was a serious responsibility for a small local authority, with a small rateable value, to take them over.

Mr. BAKER said that the electricity undertaking had paid its way—in fact it could not meet the demands being made upon it. The capital of the undertaking was £1749; and the profit on the electricity works last year amounted to 12½ p.ct. on the total capital. It was the gas undertaking which did not pay; but the profits on electricity more than made up for the loss on the gas. The Electricity Commissioners, of course, were only concerned with the electricity undertaking.

Mr. *Robert Ineson*, Chairman of the Masham Urban District Council, gave evidence in support of the measure.

The Committee passed the preamble of the Bill, and ordered it to be reported for third reading.

MISCELLANEOUS NEWS.

"B.C.G.A." DISTRICT CONFERENCES.

Two more district conferences were held last week under the auspices of the British Commercial Gas Association—one of them being at Manchester on Thursday, and the other at Leamington on Friday.

Manchester.

The delegates were welcomed at the Town Hall by the Lord Mayor (Alderman Fox), who said that if householders would use more gas and less raw coal they would be repaid a hundredfold, both in health and in pocket. Alderman Kay (the Chairman of the Gas Committee), who presided, mentioned that 85 p.ct. of the gas undertakings were members of the Association. The real cause of the smoke nuisance was the domestic coal-fire.

In the afternoon, under the chairmanship of Alderman Phillips, of Salford, there was a discussion on "Gas in Relation to the Housing Problem." Mr. Ernest Parry (Commercial Superintendent of the Oldham Corporation Gas Department) urged that gas, instead of coal, should be generally used for household purposes. If this were done, the price of gas could be materially reduced. In Oldham distribution alone cost 7d. or 8d. per 1000 c.ft. sold; whereas if full use of the mains and services were made the cost would work out at about 2d. But there were advantages from the use of gas for heating and cooking which could not be measured by mere money. Further, coal used for domestic purposes was to a large extent coal wasted. One ton of coal used in the gas works equalled two-and-a-half tons consumed in the home. This showed how great a part gas could play in the conservation of the national coal supplies.

Alderman Phillips appealed to architects and builders to do all they could in planning houses to make provision for gas-fires and gas-cookers in place of the old coal-fires. During the war, it was the gas undertakings which produced from coal enormous quantities of materials required for explosives. But there were hundreds of other substances in coal of vital value. Now, what were we doing with all these valuable substances in the ordinary household fire? At best one obtained only 20 p.ct. of the heat value of coal while the hundreds of most important substances were going up the chimney into the atmosphere. Mr. Beckett exhibited plans of houses and offices designed for gas-fires.

At the evening meeting, Dr. C. W. Saleeby lectured on the "Coal Smoke Curse and the Nation's New Homes."

Leamington.

At the Town Hall, Leamington, on Friday, a welcome was accorded to the delegates by the Deputy-Mayor (Dr. C. Miles Atkinson) in the absence of the Mayor (Mr. G. Cashmore), by reason of illness.

The President of the conference was Alderman Harold Mason, M.B., J.P., who, in his opening address, spoke of the progress that had been made during the last fifteen or twenty years. The original object of the gas companies was to supply light; but they had long since passed this stage. He thought that before long they would be extracting chemicals from the coal to a much greater degree than at present; and they would thereby automatically reduce the high prices gas companies were compelled to charge their consumers, and trade—especially in regard to dyes—would be kept in the country.

A reply was made by Mr. F. W. Goodenough (the Chairman of the Executive Committee), who dealt with the work and policy of the Association, and moved a vote of thanks to Dr. Mason. The resolution was seconded by Alderman Lloyd (Chairman of the Birmingham Gas Committee); and Mr. H. Pooley, of Leicester, supported it.

A statement respecting economies effected by certain inquiries into commercial costs was made by Mr. F. H. Holland (Director of Sales Organization of the Association). He said that when he outlined a "Sales Organization" scheme last year, it was merely theoretical; but now it was a proved success. Undertakings varying from 50 millions to 5000 millions output had adopted it with success. The scheme enabled an undertaking to have a definite knowledge of the actual value of an area. It did not require a special staff. It was for the purpose of helping the existing staff to obtain results in a better, easier, and cheaper way than had hitherto been the case. Referring to the service which was now being organized from the Association's new offices, he said they had conducted close inquiries; but the resultant data were so voluminous that he only wished to place one phase before them—a few facts in regard to fitters. He showed that by a re-arrangement of system 30 men could do the work done by 36 men only nine months ago. In addition, by a competition among the fitters, they had ascertained the tools best suited for the work, producing maximum efficiency with minimum weight. If they could help the fitters to do their work more easily and more efficiently, they would be able to reduce the job costs, and pay labour a proper wage. In conclusion, he appealed for support.

A discussion followed, in the course of which Mr. C. M. D. Belton (Shrewsbury) stated that, after going fully into the scheme, he had adopted it to a certain extent; and the results had been very satisfactory. Mr. R. J. Rogers (Birmingham) said he thought that the question of the saving of wages and walking time a very important one; and in Birmingham they had been considering it for some time past. In his opinion, the scheme was of extreme value in this direction. They had also conducted an inquiry with regard to tools; and they were getting maximum results with a minimum of cost.

A welcome feature of the luncheon was the presence of Dr. Thursfield (the Chairman of the Leamington Priors Gas Company), who was unable to attend the other meetings on account of illness. Dr. Thursfield remarked upon the progress of the gas industry, and also the position his Company had taken in this progress. The future of gas, he said, lay in its use for fuel and power. Alderman Lloyd replied; and Mr. Goodenough and Mr. R. S. Ramsden (the General Manager and Engineer of the Leamington Priors Gas Company) also associated themselves with his remarks.

The afternoon meeting consisted of an address by Mr. W. H. Beckett (London) on the "Housing Question and its Relation to Gas." Mr. Beckett first referred to labour-saving equipment, and said it was generally agreed that gas offered exceptional facilities for lighting, cooking, heating, and hot water; and it was practicable to equip private houses fully with gas appliances, so as to guarantee a commensurate revenue being obtained. The gas industry claimed that there was a system by which money, labour, and materials would be saved, the houses would be erected more quickly, and the tenants would have better conditions within their homes. The industry was both able and willing to assist in this national question; and all that remained was for Housing Committees and architects to avail themselves thoroughly of this service.

In the discussion which followed, Mr. J. Paterson (Cheltenham) said he did not know a better way of using coal than by turning it into gas. Mr. Rogers remarked that in Birmingham 95 p.ct. of the prepayment meter consumers utilized gas cookers; and they were fixing them in new houses. A vote of thanks was proposed to Mr. Beckett by Dr. Mason; and Mr. J. W. Hassall (Leamington) seconded.

In the evening a lecture was delivered by Dr. C. W. Saleeby, F.R.S.E. Mr. Goodenough moved a vote of thanks; and Mrs. Vause, in seconding, put forward the suggestion that every gas-cooker should be fitted with legs. As they are built at present, women have to stoop many times a day when using them.

This concluded the business of the conference.

NEW GAS-WORKS FOR CARLISLE.

About twelve months ago, Mr. J. E. Blundell (the Gas Engineer) submitted proposals and estimates to the Gas Committee of the Carlisle Corporation, and Mr. William Newbigging (their Consulting Engineer) made a report thereon, for the erection of new gas-works at Boustead's Grassing.

Mr. Blundell recommended a complete installation of continuously operated vertical retorts and a carburetted water-gas plant, with all other necessary work and apparatus; the total cost of the scheme being estimated early in 1919 to be £249,567. He submitted figures comparing the costs of gas production with the present system of horizontal retorts and with the proposed vertical retorts; and these showed under the new scheme a total annual saving in manufacturing costs of £16,486, or 9·89d. per 1000 c.ft. The calculations were based on then existing rates of wages and hours of labour. Any advance in wages or reduction in hours would, he added, show a further saving.

Mr. Newbigging, in approving of the scheme, pointed to the extremely congested condition of the present works, and remarked that the whole of the plant is operated by manual labour, which accounts for the high manufacturing costs. Unfortunately, he said, it is not possible to introduce stoking machinery into the works, as the retort-houses are not of sufficient size to accommodate the plant.

Revised estimates have now been submitted by Mr. Blundell, based on modified tenders received for the construction of the gas-works; and these show an increase in cost, as compared with the original estimates, from £249,567 to £328,783 (without any provision for a carburetted water-gas plant). The increase over the original prices represents 31·74 p.ct. This means—cutting-down the requirements to those of absolute necessity—an expenditure of £100,000 more than the Corporation originally applied for; and application is to be made to the Board of Trade for a further Provisional Order authorizing the borrowing of an additional sum of £100,000. Meanwhile, tenders have been accepted for work to cost about £250,000, including an installation of eight settings of eight retorts each—64 retorts in all—on the Glover-West continuous vertical system, with all equipment in connection therewith, condensers, purifiers, washers, exhausters, station meters and governors, and steam-raising plant.

Referring to the matter in the City Council last Tuesday, Mr. Buck (the Chairman of the Gas Committee) said it would not surprise those who had had experience in placing orders for machinery of any kind to hear they were now expected to pay over 30 p.ct. more than eighteen months ago; for while prices of steel, iron, bricks, &c., had largely advanced, the payment of higher wages would account for a considerable portion of the increase. However, they were placed in the position that they must go forward with all possible speed; and the contractors hoped to complete the installation in eighteen months. The Engineer would have considerable anxiety during next winter to prevent any shortage of supply owing to breakdown; and it behoved them to lose no further time in the erection of the new works, while keeping a very watchful and often anxious eye on the old works, which had served so well in the past. It could not be too clearly stated that this huge outlay was not an expenditure that would affect the rates of the city, but was an investment which was fully justified; and when the works were completed, he was convinced that Carlisle would once more be in the van of progress. The confidence thus expressed was due to the fortunate circumstance that they had as their Engineer one who was an acknowledged authority on these new methods for the carbonization of coal, and whose advice had been eagerly sought. As regarded the present position of the undertaking, the total unpaid capital at the end of the past financial year stood at £3780; and for this liability they had the present works, all mains, public lamps and meters, not to mention the goodwill of the privilege of supplying the city and surroundings with gas. He hoped that with a united and energetic Committee they might push forward with the important work before them, and thus remove the finger of scorn pointed at their old city, as one where gas was manufactured in an ancient, obsolete, and thoroughly unscientific manner.

At Dromore (co. Down) carters and vanmen on strike called out the gas workers, and great inconvenience was threatened. Fortunately, however, the workers were enabled to return after a few hours, and the lighting services remained unaffected.

GAS PRICES IN BIRMINGHAM.

The Effect of Dearer Coal.

Referring to the effect of the increase in the cost of coal upon the price of gas, the "Birmingham Post" says that the consumers will have to face a substantial rise in charges.

The new price of coal will involve the Birmingham Gas Department in an additional expenditure on that commodity of approximately £160,000 per annum, which is equivalent to an addition of about 4d. per 1000 c.ft. in the cost of gas to users. It is probable that the new scale of rates will operate from the June reading of the meters. But it must be remembered that the department have to face an application from the gas workers for a further 10s. per week in wages, and there are other enhanced costs of production which have to be met. So consumers will be very fortunate if they escape with an increase of only 4d. So far as domestic supplies are concerned, householders are in an unenviable position, as under the new arrangements the rebate which has been allowed will disappear, making the effective increase about 1s. The amount of the rebate fluctuates in accordance with certain manufacturing considerations. For the quarter which ended in March last, the amount of the rebate was 6d. per 1000 c.ft.; but for the current quarter it had been fixed at 8d.

The statutory limitation upon the price which may be charged for gas in Birmingham is 4s. per 1000 c.ft.; and the normal charge now stands at this figure. Thus the department will have to apply to the Government for sanction to increase the price beyond the maximum. The Temporary Increase of Charges Act enables this course to be followed, and increased prices charged up to 50 p.ct. beyond the previous limitation. Thus, in the case of Birmingham, the authority, with the permission of the Government, could, if necessary, go up to 6s. per 1000 c.ft. But the new Bill which the Government will bring forward contemplates the removal of the financial disabilities under which local authorities labour in this respect. It should be remembered that the Act under which application will have to be made precludes contributions by local gas undertakings to the relief of the rates while advantage is being taken of its provisions.

DEPRECIATION IN GAS-WORKS.

At the last meeting of the Glasgow Corporation Gas Sub-Committee, the Town Clerk reported that the Gas Committee had remitted back to them for further consideration a minute regarding the question of the proposed increase in rates of depreciation for the year 1919-20. The Chairman (Bailie Paterson) explained, in reference to section 50 of the Glasgow Gas Act, 1910, that the amounts written-off during the war to provide the sum necessary to meet depreciation on works, pipes, and meters had been at the rate of ½ p.ct., and on appliances at the rate of 2½ p.ct., and that it had been considered advisable (with a view to restoring gradually the pre-war rates of depreciation) that the amounts to be written-off, for the financial year ending the 31st inst., should be at the undernoted rates. He moved, and Councillor Somerville seconded, that the rates be adhered to.

On Gas-works	at 1 p.ct.
,, Chemical works	,, 1 ,,
,, Pipes	,, 1 ,,
,, Meters	,, 2 ,,
,, Appliances	,, 5 ,,
,, Premium	,, 1 ,,

As an amendment, it was proposed that the amounts to be written-off this year be at the same rate as last year. On a show of hands, six members voted for the motion and two for the amendment. The motion was accordingly declared carried.

TAR DISTILLATION AT BURNLEY GAS-WORKS.

The Burnley Corporation Gas Committee have received a report from the Gas Engineer (Mr. J. P. Leather), on the year's working of the tar distillation plant, and regard it as satisfactory. The tar produced was 2721 tons, of which 2336 tons have been distilled to pitch, resulting in the following products: Crude naphtha, 6671 gallons; light oil, 49,067 gallons; light creosote, 26,597 gallons; heavy creosote, 107,172 gallons; creosote salts, 19 tons 11 cwt. 1 qr.; pitch, 1394 tons. There have been 427 tons distilled to prepared tar, producing 4887 gallons of light oil, and 75,582 gallons of prepared tar. The financial results are as follows:

Sale of products		£10,116	2 5
Cost of distillation—			
Wages	£1039 10 0		
Fuel, 6,729,680 c.ft. gas at 2s. 6d.	841 4 2		
Sundries	291 4 7		
		2,171	18 9
Leaving		£7,944	3 8

This is equal to £2 17s. 6d. per ton of tar distilled.

Mr. Leather says: "I have taken out the figures given for the value of crude tar in the "GAS JOURNAL" market reports during the twelve months. There are two distinct reports. One gives minimum and maximum figures for the Provinces; the other gives a figure for the North of England. The averages of these figures in the former case are 43s. 6d. and 48s. 4d. per ton, and in the latter case 46s. 11½d. Taking the higher figure, our results are 10s. 6d. per ton more than the value of the crude tar, which, on 2766 tons, is equal to £1452 3s. The original cost of the tar plant was £3612 6s. 5d. The above figures do not include any allowance for management, salaries, chemical control, or depreciation. The gross income from tar products is only 5 p.ct. of the gross income of the gas undertaking. Five p.ct. on the amount of management salaries is £63 10s. 11d. The cost to this department of the chemical laboratory for the year has been £516 8s. 10d. It is probably fair to debit the tar-works with 20 p.ct. of this—viz., £103 5s. 9d. The greater part of the plant has a long life. The parts subject to heavy wear and tear are kept in order regularly out of revenue. For general depreciation, I think it is sufficient to allow 7½ p.ct., which, on £3612, amounts to £240 18s. The total of these items is £407 14s. 8d., which, deducted from £1452 3s., leaves a net profit of £4042 8s. 4d.

COMMITTEE ON SMOKE ABATEMENT.

An Interim Report.

The following forecast of the contents of the expected interim report of the Departmental Committee on Smoke Abatement (some of the evidence given before whom has been detailed in the "JOURNAL") appeared in "The Times" last Friday.

The Committee are dealing with the whole subject very carefully; but special attention has been given so far to the effect of smoke from the domestic grate. The interim report, which is really an emergency measure, will deal particularly with this side of the subject, in the hope that the Minister of Health will take immediate action to ensure that in the many housing schemes now in hand smokeless or relatively smokeless arrangements are introduced.

The evidence the Committee has heard indicates that at least one-half of the smoke nuisance, even in the worst towns, comes from the domestic hearth, and that this smoke is particularly harmful to health, owing to the fact that its constituents include a higher proportion of tar, soot, and free sulphuric acid than is found in smoke from a factory furnace. Estimates of the damage done by smoke in a large town have been obtained as a result of careful experiments. In 1905 it was calculated that in London the cost was £1 per head of the population annually; but more recent estimates, which take into account cleaning and artificial light, suggest that it is at least £3 or £4 per head.

Statistics from Manchester show how this figure can be still further increased indirectly. A comparison between a hundred working-class houses in Manchester and a similar number in Harrogate shows that the smoky atmosphere of the Lancashire city involves an extra cost per house per week for washing materials of 7½d. On this basis alone, smoke costs in extra washing materials a quarter-of-a-million pounds a year; and this figure, which was taken out in 1918, would to-day have to be increased by another £40,000 or £50,000. Moreover, the extra time spent annually in washing in Manchester, as compared with a cleaner town, is calculated to be in the aggregate 668 years. From the health standpoint, the main indictment against smoke arises from the loss of sunshine. Leeds enjoys 17 p.ct. less sunlight than places four miles outside the city boundary.

The recommendations of the Committee are not likely to involve legislation, as only points which come within Dr. Addison's present powers will be dealt with. It will be suggested that the Minister of Health should not sanction housing schemes unless they provide for smoke abatement, and that this can not only be done without extra cost, but in some cases may result in a saving. In one scheme considered by the Committee it was shown that the central heating plant resulted in a saving of £30 on a £530 bungalow. In addition to central heating plant in each house, the Committee will probably deal with the possibility of a central hot-water installation for the supply of separate houses from a common source. They will suggest that, so far as possible, gas or electricity shall be used for heating and cooking.

This announcement brought forth a letter to "The Times" from Lord Newton (the Chairman of the Committee), in the course of which he said: "It is gratifying to note the interest shown in this question; but perhaps you will allow me to correct the implication that the Committee have already decided the terms of their report. This is not the case; the report is still under consideration."

Walsall Vertical Retort Installation.—The Minister of Health has sanctioned a loan of £20,438 for the construction of vertical retorts at the Walsall Corporation Gas-Works—the repayment to be spread over a period of twenty years.

Gas-Workers' Claim at Limerick.—A threat was made by the gas-workers at Limerick to strike for increased wages; but it was decided to refer the matter to the Conciliation Board, and the men remained on duty. Their claim is for £1 per week in addition to the 10s. 3d. per day ordinary wage, with which double time is allowed for Sundays. They refused an offer of an immediate increase of 5s., with a further increase of 5s. in July. Later the men struck.

Irish Coal Shortage.—The shortage of coal in Ireland grows more acute every day; and there appears to be little prospect of any immediate change of a substantial character in the situation. What small cargoes are arriving at Dublin are in part distributed throughout the south and west. Gas-works suffer badly, both as to quantity and quality. In the Newry Urban Council, it was stated that there had been a decrease of 4000 tons in coal imports during the previous month. The Irish Coal Controller has exerted himself to the best advantage; and blame is still cast on the Shipping Ministry for not assigning vessels for cross-Channel trade.

Monte Video Gas Supply.—The report of the Directors to be submitted at the meeting to-morrow of the Monte Video Gas and Dry Dock Company, Ltd., states that, after providing for interest on debenture stock and other charges, and including £18,181 brought forward from the previous year, the balance at the credit of profit and loss available for dividend is £50,811. An interim dividend of 2½ p.ct. (free of income-tax) was paid in respect of the half year ended June 30; and the Board recommend the payment of a further dividend of 3½ p.ct. (free of income-tax), making together 6 p.ct. for the year, and carrying forward a balance of £18,296. The reserve account has been increased (by the transfer of £8000) to £40,000; and £2000 has been transferred to deferred maintenance account, increasing it to £15,000. The contingency account remains at £17,739, and the insurance fund at £12,500. Gas sales show an increase of 10·60 p.ct. upon the record sales of the previous year.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *May* 17.

In spite of the lateness of the season, there is still a certain demand for pitch for early shipment; while for next season there is a large amount of inquiry—155s. per ton having been bid and refused. Creosote is firm at from 1s. 1d. to 1s. 2d. per gallon net and naked. Pure benzol and pure toluol are about 3s. 3d. per gallon, and 95-160 solvent naphtha about 3s. 6d. per gallon. Pyridine is quoted at about 17s. 6d. per gallon, filled into buyers' drums at makers' works. There is a brisk demand for naphthalenes at advancing prices.

In sulphate of ammonia, there is nothing new to report.

Tar Products in the Provinces.

May 17.

The average values for gas-works products during the week were: Gas-works coal tar, 90s. to 95s. Pitch, East Coast, 135s. to 145s. per ton f.a.s.; West Coast—Manchester, 130s. to 135s.; Liverpool, 130s. to 135s.; Clyde, 135s. to 140s. nominal. Benzol 90 p.ct. North, 2s. 3d. to 2s. 4d.; crude 65 p.ct. at 120° C., 1s. 5d. to 1s. 7d. naked at makers' works; 50-90 p.ct. naked, North, 2s. 2d. to 2s. 4d. Toluol, naked, North, 2s. 6d. to 2s. 7d. nominal. Coal tar crude naphtha in bulk, North, 11½d. to 1s. Solvent naphtha, naked, North, 3s. 3d. to 3s. 4d. Heavy naphtha, North, 3s. 4d. to 3s. 6d. Creosote, in bulk, North, liquid, 11½d. to 1s.; salty, 10½d. to 11½d. Heavy oils, in bulk, North, 1s. to 1s. 0½d. Carbolic acid, 60 p.ct., 3s. 11d. to 4s. Naphthalene, £35; salts, £9 to £9 10s., bags included. Anthracene, "A" quality, 9d. per minimum 40 p.ct.; "B" quality, nominal.

FROM A MARKET CORRESPONDENT.

Tar Products.

The announcement of a further increase in the cost of coal, though small, has not been well received; and some hesitation was noted for a time in markets for tar products. Costs of production are added to slightly, and prices will doubtless adjust themselves in a week or so. Meantime, pitch continues very strong, despite the ending of the shipping season, and £7 15s. per ton has been reported paid. Strength is also maintained by naphthalenes; best refined making over £40, while even inferior is making £30. Crude, though the demand from the firelighter trade has ceased for the time being, is still strong. Even inferior material makes £10 per ton; but £12 10s. upwards, according to quality, is more general. Creosote and carbolic acid are without change; but benzols show a tendency to advance. Naphthas are steady, with a rather better inquiry for solvent. Intermediates continue in poor supply, and prices are difficult to fix for forward delivery.

Latest quotations are as follows:

Benzol: 90% London 2s. 5d. to 2s. 7d., North 2s. 4d. to 2s. 6d.; 50-90% 2s. 3d. to 2s. 4d. London, 2s. 2d. to 2s. 3d. North; crude 60-65%, 1s. 6d. to 1s. 8d.; pure, 3s. 3d. per gallon naked.

Crude Tar: London, 72s. 6d. to 77s. 6d.; Midlands, 70s. to 72s. 6d.; North, 70s. to 75s. per ton *ex* works. Refined tar, 52s. 6d. per barrel (free) on rail.

Pitch: London, 155s. per ton; East Coast, 145s. to 150s. per ton; West Coast, 135s. to 150s., with Manchester 140s. per ton, and Glasgow 140s. per ton; South Wales, 145s. per ton.

Solvent Naphtha: London, 3s. 6d. Provinces average 3s. 4d. per gallon.

Crude Naphtha: Naked, 10d.; North, 9d. per gallon.

Heavy Naphtha: 3s. 6d. per gallon.

Naphthalene: Refined, £40 per ton nominal; inferior, £30; crude, £9 10s. to £20, according to quality.

Toluol: Naked, 2s. 9d. per gallon nominal. North, 2s. 7d. Pure, 3s.

Creosote: London, 1s. 0½d. to 1s. 1d.; North, 1s.; heavy oil, 10½d. per gallon in bulk.

Anthracene: 40-45%, 9d. per unit per cwt.

Grease Oils: 18° Tw. (naked), £6 10s. per ton f.o.r. makers' works.

Aniline Oil: 1s. 5d. to 1s. 6d. per lb., drums extra.

Aniline Salts: 1s. 10d. to 2s. per lb.

Cresylic Acid: 95%, 4s. 3d. to 4s. 6d.; 97-99%, 4s. 6d. to 4s. 9d. per gallon *ex* works London, f.o.b. other ports.

Carbolic Acid: Crude 60%, 4s. per gallon; crystals 40%, 1s. 3d. to 1s. 4d. per lb.

Salicylic Acid: Technical, 3s. 6d. to 3s. 9d.; B.P., 3s. 9d. per lb.

Sulphate of Ammonia.

Supplies continue fair, and are readily taken up at the fixed price of £22 per ton. Export prices are, of course, much higher, and range from £35 to £45, according to destination. With regard to control, some relaxation is expected after the end of this month; but the introduction of the Fertilizers (Temporary Control) Bill foreshadows a continued restriction in a modified form for a further two seasons. At the time of writing, next season's prices are still unfixed; but there is no doubt they will show an advance on current figures. Nitrate of soda is selling at £25—this is equivalent to a price of £32 10s. for sulphate of ammonia. The export trade is also expanding quietly, and the temptation to push out larger allocations for overseas buyers is naturally very great when one considers present high export prices. That these latter can go much higher is also agreed.

Meeting a Gas-Works' Deficit at Drogheda.—It was stated at a Drogheda Corporation meeting that the deficit in the revenue of the gas-works amounted to £3600, and that a rate of 3s. in the pound was essential to meet it.

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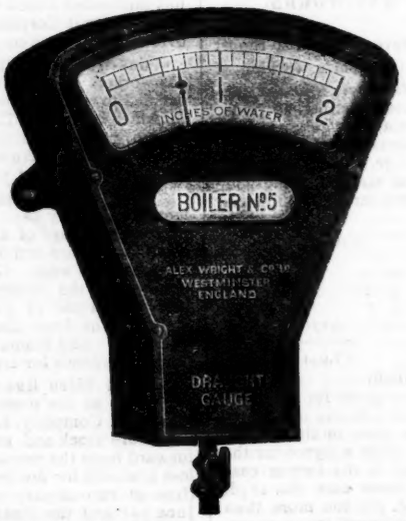

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Municipal Trading Capital at Walsall.

There was a lengthy discussion at a meeting of the Walsall Town Council, on Monday of last week, relative to a proposal that a charge of 1 p.ct. should be made on the net debt outstanding from time to time on each of the trading undertakings, in respect of the provision by the Corporation of the capital. Alderman Ingram said the days of profits on municipal undertakings were gone; and it was not unreasonable for the Corporation to ask its trading committees now to give them something back towards the cheap capital they let them have years ago. Alderman Pearman Smith remarked that he was a little bit afraid municipal trading was not proving the success it was thought to be. Dr. Lynch described the step as a retrograde one, and said that now the Corporation could not get any more money out of the trading concerns towards the rates, they were going to force something out of them. Alderman Cope urged that the proposal was iniquitous. The recommendation was, however, agreed to.

The Convex Incandescent Mantle Company (1920) has been registered as a private company, with a capital of £50,000 in £1 shares. The object is to take over the business, and all or any of the works and liabilities, of the Convex Incandescent Mantle Company, Ltd. The registered office is Nos. 12 & 13, Henrietta Street, W.C.

Cape Town and District Gas Company.—The accounts of the Company for the year ended Dec. 31 last (to be submitted at the meeting to-morrow) show that, after providing interest on debentures and debenture stock, the result of the year's working is a profit of £18,595, which, with the sum brought forward, makes a total of £20,803. The expenses of repairs and renewals of plant have been abnormally heavy; and £2000 has been charged against the reserve provided for the purpose. The total balance to be dealt with is therefore £22,803. The sum of £1066 has been written-off for depreciation of stocks, £2500 has been transferred to reserve and contingency account, £4500 has been paid on account of arrears of dividend on preference shares, and it is proposed to pay a further sum of £9000 on this account—leaving a balance of £5736, out of which the Directors propose to pay a dividend of 4 p.ct. on the ordinary shares, absorbing £4000, and bringing forward the balance of £1736. The number of consumers at Dec. 31 was 6044, a loss of 299 for the year. This decrease was caused by inability to provide and fix new meters as fast as old ones became unsuitable, though every meter was sent out that could be obtained. The Company have had to meet heavy increases in the cost of coal, carriage, wages, and materials; and the Directors have been compelled to increase the price of gas, as from Jan. 1 last. In order to keep pace with the demand for gas, it became necessary to repair further old and uneconomical retorts for temporary use until new plant can be provided. A contract for additional carbonizing plant has been placed, but the work cannot be completed until late next year. The make of gas rose from 189,304,000 c.ft. in 1918 to 204,184,000 c.ft. last year.

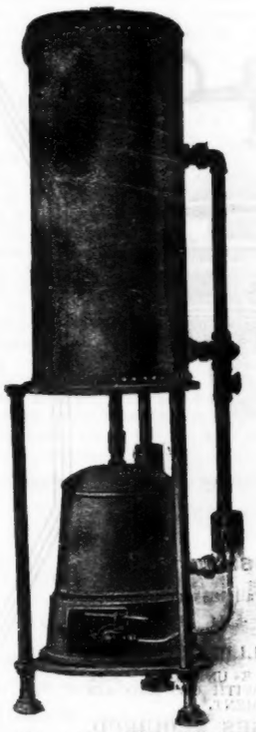
Ballymena Gas-Works Extensions.—A letter has been addressed to the Ballymena Urban Council by the Local Government Board for Ireland sanctioning a loan of £20,000 for the purpose of erecting vertical retorts and providing new hoppers at the gas-works. Repayment is to be spread over a period of fifteen years.

Darwen Gas-Works Results.—In the Darwen Town Council last week, Alderman Cocker announced a profit of £6030 (the largest on record) for the Gas Department. Coal had cost £5216 more than in the previous year; but the receipts were up £14,521. Over 200 million c.ft. of gas had been manufactured. He congratulated Mr. A. H. Smith on having completed 23 years' service as Gas Engineer to the Corporation.

Vertical Retort Installation for Perth.—The Perth Town Council have had for consideration a recommendation of their Special Gas Committee to instal the Glover-West system of vertical retorts, with coal and coke handling plant. The total outlay is estimated at £65,000. The Committee have paid visits of inspection to Uddingston, Hamilton, Helensburgh, and Greenock; and the Council will apply to the Secretary for Scotland for permission to borrow the necessary money.

British Dyestuffs Corporation.—Reporting upon the results of the working of the Corporation for the year ended Oct. 31, the Directors state that the revenue available for distribution amounts to £172,504. They recommend a dividend on the preferred ordinary shares at the rate of 8 p.ct. per annum, less tax, calculated from the due date of each instalment, leaving to be carried forward a balance of £58,826. An issue of £5,000,000 preference and preferred ordinary share capital was made in July, and though no advantages from any construction for which the proceeds of this issue will be available have been obtained during the year under review, the money will enable the associated companies to carry out important extensions and developments at their works which will substantially increase the volume and range of dyestuffs in future years.

Calorific Power of Gas.—Reference was made at the quarterly meeting of the Urban District Councils Association to a letter written by the Board of Trade in June, 1919, renewing the request contained in their letter of December, 1918, that urban district councils should refrain from taking proceedings against gas undertakings in respect of deficiencies of calorific power so long as it did not fall below 450 B.Th.U., and so long as the proportion of inert constituents was not excessive, and stating that the position would be reviewed before the end of October 1919, and a further communication would then be made to the Association. The Secretary reported that, not having received any further communication from the Board of Trade, he had asked what action was being taken by them in the matter. In reply, the Board stated that, though they did not formally renew the requests to local authorities contained in their earlier letters, they still find it necesssry to deprecate, in view of the coal situation, any action being taken at present which would compel gas undertakers to use more coal in the production of gas.



No. 424. The "Energy."
Stands can be supplied to any desired height.

The "Main" Circulating Water Heater.

THIS Gas Heater is constructed throughout of strong cast iron with corrugated inner and outer jackets giving an unprecedented heating surface. The gases, after heating the inner jacket, are drawn to the base, and to reach the flue outlet must travel over the outer casing, thus utilising the heat to the utmost.

A really efficient thermostat is fitted; and the heat-retaining outside casing is made of steel, porcelain enamelled, giving the heater a most attractive appearance.

A sample will convince you of its efficiency.

R. & A. MAIN, LTD.

WORKS: Gothic Works, EDMONTON, N.18; Gothic Ironworks, FALKIRK; and Gothic Works, BIRMINGHAM.

SHOW-ROOMS AND BRANCHES: 25, Princes Street, Oxford Circus, W.1; 82, Gordon Street, GLASGOW; 18, Severn Street, Deansgate, MANCHESTER; 97, Millfield, BELFAST; 6, Narrow Wine Street, BRISTOL; 333, Queen Street, MELBOURNE.

Llanelly Gas Strike Collapses.—After having put the town to great inconvenience for a fortnight owing to want of gas, the Llanelly gas workers have, it is reported, returned to work unconditionally.

Bideford Gas Company.—At the annual meeting of the Bideford Gas Company, the Chairman (Mr. F. A. Searle), in proposing the adoption of the report, said coal had cost £11,244, as compared with £8640; and wages, £1786, contrasted with £1418 last year. Since 1914 the cost of their coal had gone up 81 p.ct. The shortage and poor quality of the coal supplied had been responsible for difficulties experienced during the year. A 7 p.ct. dividend on the original shares and 4 p.ct. on the additional share capital were declared.

Newark Gas Company's Share Issue.—One thousand new ordinary shares and 1500 redeemable preference shares in the Newark Gas Company have been offered at an auction, £12,300 being realized. The new ordinary shares, paying 5½ p.ct., and with a possible earning power of 10 p.ct. when the price of gas goes down according to the Company's sliding-scale, were first put up. The initial lot of ten, of the nominal value of £10 each, were knocked-down at par; and a further twenty lots of ten each were also sold for £100 per lot. Then 103 lots of preference shares sold at prices varying from £10 to £10 2s. 6d. per share.

Paris Gas Strike.—A gas strike was started in Paris last Friday morning, but the effect on the public was small. Writing that evening, the correspondent of the "Daily Telegraph" said that, with the strike of electricians practically dead, that of the gas workers is not likely to be successful. It has to be admitted that a large number of men are out in Paris and its suburbs; but there is gas all the same, though the pressure has been lowered as a measure of precaution. The Gas Company have given an assurance that in spite of the strike the supply will not fail. Volunteers are engaged at the gas-works, and measures have been taken to produce 500,000 cb.m. of gas daily.

Stafford Gas-Works' Finances.—Attention was drawn, at a meeting of the Stafford Town Council last Tuesday, by Alderman Westhead (the Chairman of the Gas and Electricity Committee) to the working of these departments during the past year. It was recommended that, from the Gas Department supplies of £2251, £1000 be credited to the district rate fund. He mentioned that, in consequence of the enormous increase in demand, the new retorts were fully taxed at the present time; and very shortly they would be asking for some further extensions. In answer to a question as to what effect the increased price of coal would have, Alderman Westhead said the cost would be something like 4d. per 1000 c.ft. more. They had hoped to make a rebate of 10d. to domestic consumers this quarter; but it would now be 6d., and at the end of the quarter the 6d. rebate would cease. It was reported that Alderman Westhead, for personal reasons, had resigned the chairmanship of the Committee; and his services were warmly eulogized.

Corporation Employees' War Allowance.—An unsuccessful claim was made in the Croydon County Court by an employee of the Croydon Corporation, who said he was entitled to £74 balance of war allowance, according to the early resolutions of the Corporation. The employee was one of those who enlisted in 1914. It was argued by the Town Clerk that the intentions of the Corporation were overruled by the Local Government (Emergency Provisions) Act, 1916. The man received the difference between his civil remuneration and his Army pay, *plus* 25 p.ct., which was the most that could be allowed him under the Act. The Judge held that the plaintiff had received all to which he was legally entitled. It was a great hardship and disappointment that he and others similarly situated could not recover what had been promised. He suggested that, perhaps, by a local public subscription the original intentions of the Corporation could be made good. Judgment was given for the defendants. The total amount involved in this dispute is about £2500.

The Beaumaris Town Council have decided to buy the town gas-works from Sir Richard Williams Bulkeley for £1500.

At Blackburn, Arthur Slater, a cycle dealer, was proceeded against for disconnecting a gas meter on his premises without giving notice to the Corporation, and also for laying or causing to be laid without consent a pipe connected with the meter. He was fined 10s. in each case.

A meeting of the ratepayers of Colwich, near Stafford, was held recently to consider the question of whether a supply of gas should be adopted for the district. Mr. H. W. J. Pugh (the Chairman of the Parish Council) presided; and it was eventually decided that the present time is not suitable for the introduction of a supply of gas to the area.

The Bradford and District Sheet-Metal Trades Joint Consultative Board have protested to the Corporation against firms being engaged on street-lamp repairs who do not employ sheet-metal workers. In reply, the Engineer (Mr. Charles Wood) explained the difficulty of getting any repairs done, and intimated that he would appreciate the help of the Board.

The Society of British Gas Industries held its Annual Golf Competition for the "Yates Challenge Cup" at Stourbridge on the 5th inst., on the invitation of Mr. Perry. Mr. Frank Richmond, a Director of the Richmond Gas Stove and Meter Co., Ltd., was the ultimate winner. In the morning, he tied with Mr. T. Allen, of Messrs. Gibbons (Dudley) Ltd., so that another round was played by them in the afternoon, with the above result.

The Richmond Gas Stove and Meter Company held a conference of their heads of departments and representatives at the Warrington works of the Company last Tuesday and Wednesday, Mr. H. M. Thornton presiding. The various new productions were inspected and discussed, and particular attention was paid to the new designs in the "Period" series of gas-fires—especially the development of the patent "R.H.D." (Radiant Heat Distributor) principle. Particulars of these will be published to the industry very shortly.

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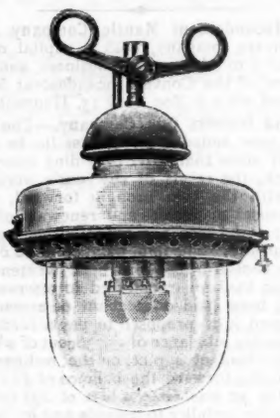
WHITE ENAMELLED CASING.

FITTED WITH 3 MEDIUM SIZE INVERTED BURNERS ARRANGED WITH PRE-HEATED CHAMBER AND WITH GAS AND AIR ADJUSTMENT.

NO INNER GLASSES REQUIRED.



W 667.

Length over all 15 ins.
Diameter . . 11 ins.

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BRITISH MADE
INDOOR LAMPS

W 668.

Length over all 18½ ins.
Diameter . . 14 ins.

WHITE ENAMELLED CASING.

FITTED WITH 3 ANGLE UNIVERSAL SIZE INVERTED BURNERS, WITH GAS AND AIR ADJUSTMENT.

NO INNER GLASSES REQUIRED.

Catalogue & Prices on application.

ADVT. OF THE WELSBACH LIGHT COMPANY, LIMITED, WELSBACH HOUSE, KING'S CROSS, LONDON, W.C. 1.

STOCK MARKET REPORT.

THE general trend of things on the Stock Exchange last week was scarcely up to the level of its predecessor. The tone was less firm, and frequent oscillations succeeded each other at too short notice to be pleasant.

The gilt-edged division had not much to complain of. Home Government issues started in fine form, and in a couple of days had made good gains. These were not fully kept up; but some were maintained until Friday, the figures on which day were: Consols 48⅛-49, War Loan 85⅝-86⅛, Funding 69⅝-70⅛, Victory 79⅛-80⅛.

The Foreign Market was flattened by Continental selling of Russian, Chinese, and Brazilian; but French and Belgian held their own fairly well.

Much weakness was apparent in the Miscellaneous section, where budgetary alarms and pressed realizations disturbed equanimity. Rubbers and Oils were prominently weak, and Textiles and Iron and Steel were easier; but Shipping was a little better.

Business in the Gas Market showed a nice improvement upon the week before. There was increased activity; and the general tone was much more cheerful. This was eminently conspicuous in the London Companies. Gas Light ordinary, which opened at 49¼, steadily pushed its way up to a final bargain at 57, and South Metropolitan similarly advanced from 50½ to 56½—the quotation in each showing a rise of 6. Commercial was not dealt in. Suburban and Provincial were steady. Imperial Continental was calmer and steadier; but the final prices were not the best. European was ½ easier. Other changes were *ex div.* adjustments.

Bargains done for cash during the week were as follows: On Monday, Cape Town 7⅛, 7⅜, Croydon "C" 92, Gas Light ordinary 49½, 49⅝, 49¾, 50, 50¼, 50½, 51, ditto maximum 38⅛, Imperial Continental 138, 138⅛, 139, 140, 140½, 141, Primitiva preference 37s. 6d., 38s. 9d., 42s. 6d., South Metropolitan 51, Southampton 59½, Tottenham "A" 64⅛, ditto "B" 45¼, Worthing 6 p.ct. mortgage 91½. On Tuesday, Brentford "A" 44½, Croydon "C" 92, 92⅛, Gas Light ordinary 49½, 50½, 51, 51½, 52, 52½, 53, ditto maximum 39⅛, ditto preference 57, Imperial Continental 138, 138⅛, 138, 139¼, 139⅜, Primitiva 20s., South Metropolitan 50½, 50⅝, 51, 51⅛, 52, 52⅛, 53, ditto debenture 47⅛, Southampton 60, Tottenham 45⅛. On Wednesday, Alliance and Dublin 39¾, Cape Town preference 6⅞, 6⅞, Commercial debenture 45, Croydon "C" 94, European 6½, Gas Light ordinary 51½, 52½, ditto preference 56, ditto debenture 46⅞, Imperial Continental 137, 137⅛, 137⅛, 138, 138⅛, 139, 139⅛ 139⅛, South Metropolitan 51⅞, 53⅛, Southampton 59, Tottenham "B" 45⅛. On Thursday, Brentford "A" 44½, Croydon "A" 130½, ditto "C" 93⅛, European 6½, Gas Light ordinary 53, 54, 54⅛, 55, 55⅛, 55⅛, 56, ditto maximum 37, ditto preference 56, Imperial Continental 136½, 137, ditto debenture 83⅛, Primitiva 18s., ditto preference 37s. 6d., South Metropolitan 53, 54, Tynemouth 72. On Friday, Brentford "A" 45⅛, European 6, Gas Light ordinary 55⅛, 57, ditto maximum 38, 39½, ditto preference 56⅛, 57⅛, 58, Hong Kong 9⅛, 9½, Imperial Continental 135, 136, 137, ditto debenture 82, 83, 83⅛, Primitiva 21s., South Metropolitan 56⅛, Tottenham "A" 64, 64⅛, 64½.

In the Money Market, the demand stiffened sharply, and rates both for short loans and for discount were considerably advanced. The Bank rate is 7 p.ct., as fixed on the 15th of last month.

ANTE-WAR PRICES AND DIVIDENDS, LATEST DIVIDENDS, AND LAST WEEK'S BARGAINS.

Issue. £	Share	When ex-Dividend.	Ante-War Dividend & Bonus. p.c.	Last Dividend.	NAME.	Closing Prices. July 26, 1914.	Present Prices.	Lowest and Highest Prices of Bargains.
183,049	Stk.	Mar. 11	4	4%	Aldershot 4 p.c. Pref.	..	58—63	..
1,581,868	"	Mar. 26	3½	3 7/11%	Alliance & Dublin Ord.	39—34	37—42	39¾
874,000	"	Jan. 15	4	4%	Do. 4 p.c. Deb.	76—72	61—63	..
280,000	5	May 13	7½	8%	Bombay, Ltd.	5½—6	4½—5½*	..
80,000	10	Feb. 26	16	10%	Bournemouth Gas and Water { 12 p.c.	29—30	8½—9	..
383,110	10	"	7	7%	Bournemouth Gas and Water { B 7 p.c.	15—15½	9—10	..
115,000	10	"	6	6/-	Bournemouth Gas and Water { Pref. 6 p.c.	13½—14	8½—9	..
162,065	—	Dec. 30	—	4%	Bournemouth Gas and Water { 4 p.c. Deb.	..	64—66	..
993,645	Stk.	Feb. 12	14	30/-	Brentford A Consolid.	261—256	44—49	44½—45½
784,220	"	"	11	26/8	Do. B New	204—200	40—45	..
55,000	"	"	5	5%	Do. 5 p.c. Pref.	109—111	70—75	..
221,490	"	Dec. 11	4	4%	Do. 4 p.c. Deb.	91—93	64—66	..
214,775	"	Mar. 11	11	7½%	Brighton & Hove Orig.	205—213	121—126	..
344,200	"	"	8	5⅓%	Do. A Ord. Stk.	154—159	80—85	..
1,287,500	Stk.	Feb. 26	5	5%	Bristol 5 p.c. max.	..	..	..
680,000	10	Apl. 14	12½	10%	British	44—45	24—26	..
132,000	Stk.	Dec. 30	4	4%	Do. 4 p.c. Deb. Stk.	83—90	59—61	..
245,771	"	"	4	4%	Buenos Aires 4 p.c. Deb.	86—87	47—50	..
100,000	10	—	—	—	Cape Town & Dis., Ltd.	14—15	7½—7⅝	7⅛—7⅜
100,000	10	Oct. 30	—	4½%	Do. 4½ p.c. Pref.	6—6	6½—6⅝	6⅝—6⅝
100,000	Stk.	Dec. 30	4½	4½%	Do. 4½ p.c. Deb. Stk.	70—75	58—63	..
187,150	"	Feb. 26	5	5%	Chester 5 p.c. Ord.	108—110	..	..
1,518,380	"	Feb. 26	5/9/4	33/4	Commercial 4 p.c. Stk.	106—108	48—53	..
360,000	"	"	5½	26/8	Do. 3½ p.c. do.	108—106	44—49	..
475,000	"	Dec. 11	3	3%	Do. 3 p.c. Deb. Stk.	69½—71½	46—49	45
200,000	"	"	4	—	Continental Union Ltd.	75—79	27—32	..
100,000	"	"	7	—	Do. 7 p.c. Pref.	115—118	40—60	..
51,600	Stk.	Feb. 26	14½	104%	Croydon A 10 p.c.	..	130—140	130½
378,408	—	"	11½	7½%	Croydon B and C 7 p.c.	..	90—100	92—94
422,276	Stk.	—	6	5%	Derby Con. Stk.	138—135	..	..
55,000	"	—	4	4%	Do. Deb. Stk.	102—104	..	..
1,902,180	10	Jan. 29	10	5/6	European, Ltd.	17½—18	6—7	6—6½
15,298,975	Stk.	Feb. 12	4/17/4	80/-	Gas Light { 4 p.c. Ord.	98—102	54—57	49½—57
2,500,000	"	"	34	26/8	Gas Light { 5½ p.c. max.	76—72	38—43	57—39½
4,362,335	"	"	4	4%	Gas Light and Coke { 4 p.c. Con. Pref.	96—99	55—58	56—58
4,374,850	"	Dec. 11	3	3%	Gas Light and Coke { 3 p.c. Con. Deb.	73½—74½	45—48	46½
130,000	"	"	10	10%	Gas Light and Coke { 10 p.c. Bonds	..	..	..
82,500	"	Mar. 11	5	3⅓%	Hastings & St. L. 5 p.c.	..	55—60	..
365,748	"	"	3½	2⅓%	Do. 3½ p.c	37—39	33—43	..
70,000	10	May 13	11	7%	Hongkong & China, Ltd.	16½—18½	8½—9½*	9½—9½
66,600	Stk.	Mar. 11	9	6⅔%	Hornsey 7 p.c.	..	85—93	..
151,000	"	"	7½	5⅓%	Ilford A and C.	151—154	86—91	..
65,780	"	"	6½	4⅓%	Do. B.	115—118	65—70	..
68,580	"	Dec. 30	4	4%	Do. 4 p.c. Deb.	93—94	57—60	..
4,949,000	"	May 14	9	4½%	Imperial Continental	138—140	135—145	135—141
1,235,000	"	Feb. 12	3½	3½%	Do. 3½ p.c. Deb. Red.	84—86	80—85	82—83½
733,943	"	Mar. 26	6½	5⅓%	Lea Bridge Ord. 5 p.c.	119—121	80—85	..
1,458,986	"	Feb. 26	13	37/6	Liverpool 5 p.c. Ord. { A / B	211—213 / 145—148	..	..
206,366	"	June 26	4	4%	Do. 4 p.c. Pr. Deb. Stk.	..	..	..
185,736	"	Feb. 26	7/5/8	33⅓%	Maidstone 5 p.c.	..	52—57	..
75,000	5	June 11	5	5%	Malta & Mediterranean	4½—4⅝	1⅞—2½	..
250,000	100	Apl. 1	4½	4½%	Met. of Melbourne { 4½ p.c. Deb.	99—101	89—96	..
241,920	Stk.	Nov. 27	4	6⅔%†	Monte Video, Ltd.	11½—12	74—78	..
1,876,892	"	Feb. 26	4½	34%	Newcastle&Gatsh'd Con.	93½—93½	63—65	..
539,795	"	Dec. 30	3½	3½%	Do. 3½ p.c. Deb.	85—88	55—57	..
15,000	10	Mar. 11	—	33⅓%	North Middlesex 10 p.c.	..	18—18½	..
55,940	10	"	7/14/0	6½%	" " 7 p.c.	14—15	82—92	..
300,000	Stk.	May 13	8	5%	Oriental, Ltd.	117—122	102—105*	..
60,000	5	Mar. 26	10	1/-	Ottoman, Ltd.	7½—7⅝	4⅜—5½	..
50,000	50	Mar. 11	15	7½%	Portsea, Island B	128—131	66—71	..
100,000	50	"	12	6⅔%	Do. C	118—121	58—58	..
249,980	5	April 29	6	—	Primitiva Ord.	5½—6	1—1⅜	1s/—21/-
499,950	5	June 26	5	—	Do. 5 p.c. Pref.	4½—5	1½—2½	37/6-40/6
631,600	100	Dec. 1	4	4%	Do. 4 p.c. Deb.	91—93	70—72	..
600,000	Stk.	Jan. 29	4	4%	Do. " " 1911	..	47—50	..
346,198	"	Dec. 30	4	4%	River Plate 4 p.c. Deb.	85—87	47—50	..
150,000	10	Mar. 26	6	6/-	San Paulo { 6 p.c. Pref.	10½—11	7½—7⅞	..
125,000	50	Dec. 30	5	5%	San Paulo { 5 p.c. Deb.	47—49	30—41	..
125,000	Stk.	Mar. 11	10	50/-	Sheffield A	236—234	68—78	..
209,984	"	"	10	4⅓%	Do. B	223—234	58—68	..
528,800	"	"	10	35/5	Do. C	220—223	58—68	..
133,201	Stk.	Sept. 12	4	4%	Shrewsbury 5 p.c.	..	..	..
98,000	10	Oct. 15	9	10%	South African.	10½—11½	12—13	..
6,609,598	Stk.	Feb. 12	5/4/0	30/-	South Met. 4 p.c. Ord.	111—113	54—57	50½—56½
250,000	"	Jan. 15	—	5%	Do. Pref.	..	93—95	..
1,895,445	"	"	3	3%	Do. 3 p.c. Deb.	72½—74½	47—50	47½
234,890	"	Feb. 28	3½	3%	South Shields Con. Stk.	154—159	103—104	..
1,087,795	"	Aug. 14	6	3⅓%	S'th Suburb'n Ord. 5 p.c.	114—116	64—69	..
247,558	Stk.	Dec. 30	5	5%	Do. 5 p.c. Deb. Stk.	116—118	78—83	..
647,740	"	May 13	7½	3⅓%	Southampton Ord.	99—122	57—60*	59—60
121,275	"	Dec. 30	4	4%	Do. 4 p.c. Deb. Stk.	..	61—63	..
120,000	"	Aug. 14	3	3⅓%	Tottenham { A 5 p.c.	135—136	60—65	64—64½
729,275	"	"	6	2⅔%	Tottenham { B 5½ p.c.	115—117	45—50	45½—45½
181,255	"	Dec. 11	4	4%	Tottenham { 4 p.c. Deb.	87—89	61—64	..
122,880	10	Dec. 30	5	—	Tuscan, Ltd.	5—6	1—2	..
149,900	10	July 1	5	5%	Do. 5 p.c. Deb. Red.	93—95	45—50	..
326,478	Stk.	Mar. 11	5	3⅓%	Tynemouth 5 p.c. max.	106½—109	71—73	72
80,000	"	Feb. 26	8½	55/-	Wandsworth, Wimbledon, and Epsom— Wandsworth A 5 p.c.	151—156	83—88	..
258,538	"	"	6½	40/-	Do. B 5½ p.c.	129—134	81—86	..
108,075	"	"	—	38/6	Do. C	..	81—86	..
140,365	"	"	—	38/6	New Ordinary	..	81—86	..
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